

Environmental Assessment

Lake Okeechobee Regulation Schedule, Water Supply and Environment Lake Okeechobee, Florida

Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts



**U.S. Army Corps
of Engineers**
Jacksonville District



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REPLY TO
ATTENTION OF

**FINDING OF NO SIGNIFICANT IMPACT
TEMPORARY PLANNED DEVIATION
TO ADJUST CLASSIFICATIONS OF HYDROLOGIC INDICATORS
AND FORECASTS**

LAKE OKEECHOBEE REGULATION SCHEDULE,
WATER SUPPLY AND ENVIRONMENT (WSE)

LAKE OKEECHOBEE, FLORIDA

I have reviewed the Environmental Assessment (EA) for the proposed action. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Based on the information analyzed in the EA and pertinent data obtained from Federal and State agencies having jurisdiction by law and/or special expertise, and information obtained from the interested public, I conclude that the considered action would have no significant impact on the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are, in summary:

- a. The action will not adversely affect the balance of authorized purposes of the Central and Southern Florida Project for flood control, water supply, fish and wildlife conservation, and recreation.
- b. The selected alternative, Class Limit Adjustment, is a minor modification to the Lake Okeechobee WSE regulation schedule providing improvement to the in-lake performance without significantly impacting the performance of the other lake management objectives
- c. The action will not adversely affect any endangered or threatened species or critical habitat under the Endangered Species Act.
- d. No adverse impacts to Essential Fish Habitat.
- e. The action is consistent with the State's Coastal Zone Management program.
- f. A determination of no affect to historical properties has been made.

Date

1/25/2005

for Ed. S.
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**ENVIRONMENTAL ASSESSMENT
FOR
TEMPORARY PLANNED DEVIATION
TO ADJUST CLASSIFICATIONS OF HYDROLOGIC INDICATORS
AND FORECASTS**

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ENVIRONMENTAL ASSESSMENT FOR TEMPORARY PLANNED DEVIATION TO ADJUST CLASSIFICATIONS OF HYDROLOGIC INDICATORS AND FORECASTS

1 PROJECT PURPOSE AND NEED

1.1 PROJECT AUTHORITY.

Authority for this action is the Flood Control Act of 1948 (approved by Congress on June 30). It authorized the Central and Southern Flood Control Project, which is a multipurpose project that provides flood control, water supply for municipal, industrial, and agricultural uses; prevention of salt water intrusion; water supply for Everglades National Park (ENP); and protection of fish and wildlife resources.

1.2 PROJECT LOCATION.

The areas that may be affected by the proposed action includes Lake Okeechobee, the St. Lucie and Caloosahatchee Estuaries, and the Everglades Water Conservation Areas (see **Figure 1**, vicinity map).

Lake Okeechobee is located in south central Florida, and occupies portions of Glades, Hendry, Martin, Okeechobee, and Palm Beach Counties. The lake has an area of approximately 730 square miles.

The St. Lucie Estuary is located within portions of both Martin and St. Lucie Counties on the southeast coast of Florida. The two forks of the St. Lucie Estuary, the North Fork and South Fork, flow together near the Roosevelt Bridge at the City of Stuart, and then flow eastward approximately six miles to the Indian River Lagoon and Atlantic Ocean at the St. Lucie Inlet.

The Caloosahatchee Estuary is located on the southwest coast of Florida in Lee County. The Caloosahatchee River runs from Lake Okeechobee to the W. P. Franklin Lock and Dam (S-79) where it empties into the estuary.

The Water Conservation Areas (WCAs) are located to the south of Lake Okeechobee and to the north of Everglades National Park. The WCAs are areas managed for multiple purposes, but designed to receive and store water from adjacent areas, including Lake Okeechobee.

1.3 PROJECT NEED OR OPPORTUNITY.

The need for this action is clearly defined by limitations on releases from Lake Okeechobee during periods when water levels are high and the lake's littoral area would benefit from a reduction in water levels. As the recent past has shown, the Water Supply and Environment (WSE) regulation schedule may not allow for lake discharges even when a prolonged, moderately high stage is detrimental to the lake's littoral zone and ecological health.

1.4 AGENCY GOAL OR OBJECTIVE.

The agency goal is to improve performance of the WSE regulation schedule. The objective is to increase frequency of low level pulse releases in the lower zone of the schedule (Zone D) to improve in-lake performance with minimal or no adverse impacts to the performance of the multiple lake management objectives. Lower level pulse releases, which occur more often while in Zone D, can reduce the likelihood that the lake stage will go into a zone which may require higher discharges.

1.5 BACKGROUND AND PREVIOUS ENVIRONMENTAL DOCUMENTS.

A Final Environmental Impact Statement (EIS) was completed for the Lake Okeechobee Regulation Schedule Study. The EIS led to a Record of Decision (ROD) signed in July 2000. The objective of the study was to develop and select a new regulation schedule that would better optimize environmental benefits with little or no impact to competing purposes of flood control, water supply, navigation, regional groundwater control, salinity control, enhancement of fish and wildlife, and recreational purposes (USACE, 2000a). The schedule that was recommended in the EIS was named WSE (Water Supply and Environment) since it was designed to improve benefits to water supply and both lake and estuarine ecology. The WSE schedule was approved and implemented in 2000, and is the current regulation schedule for Lake Okeechobee. The regulation schedule that preceded WSE was known as the Run 25 regulation schedule.

The WSE regulation schedule was developed with the intent to improve the performance of the lake's littoral zone habitat and water supply, without impacting the other lake management objectives. The WSE regulation schedule provides more operational flexibility relative to earlier flood control schedules, such as Run 25, and was specifically designed to "optimize environmental benefits at minimal or no impact to competing lake purposes" (USACE, 2000a). The first releases made under WSE occurred in July 2002. In the short time since its implementation, the WSE has demonstrated improved performance for environmental objectives but also, its performance is equal to, or better than, the previous schedule, Run 25, for flood protection and water supply. However, it is realized that some improvements to the WSE can be made with minor modifications to the regulation schedule. A specific weakness of WSE has been the high percentage of time that the estuary

decision tree (**Figures 2 & 3**) calls for no releases while the lake stage is in Zone D of the regulation schedule. There have been times when such releases could have been made to the estuaries, ***without adverse impacts***, but the decision tree did not lead to that action. Such releases would have benefited Lake Okeechobee's littoral zone without significantly impacting other lake management objectives.

As part of recent efforts to improve the performance of the WSE, so that it better meets its intended objectives as described in the WSE EIS, several alternative regulation schedule modifications were developed and analyzed by the South Florida Water Management District (SFWMD). Of the alternatives that were evaluated, one referred to as the *Class Limit Adjustment* (CLA), detailed below, appears to meet the goals and objectives of both the SFWMD and the U.S. Army Corps of Engineers' (USACE) efforts to improve the WSE. The CLA could be an easily implemented modification that merges well with the existing WSE EIS.

This modification, or refinement, would increase the frequency of Zone D pulse releases. The WSE regulation decision trees (**Figures 2 & 3**) utilize three operational elements to evaluate the conditions in the lake and the regional system to make weekly operational decisions. The CLA lowers the classification limits of the Tributary Hydrologic Conditions and Lake Okeechobee's Net Inflow Outlook (LONINO), thus decreasing the percent of time when the decision tree indicates no releases should be made. The CLA improves the likelihood of making smaller releases more often, as opposed to stressful high damaging estuary releases. Smaller releases are preferred because the higher volume releases can have adverse effects to estuarine biota. The CLA would allow water managers to have the enhanced flexibility to allow for more environmentally sensitive management of discharges to the estuaries.

The performance of the CLA was simulated by using the South Florida Water Management Model (SFWMM v5.4.2). The SFWMM is a regional-scale, continuous simulation, hydrologic model that was developed and is maintained by the SFWMD. The SFWMM simulates the hydrology and water management of southern Florida from Lake Okeechobee to Florida Bay (Neidrauer, et al., 1998). The technical report in **Appendix B** summarizes the performance of the CLA alternative relative to the baseline WSE schedule with the original class limits.

1.6 DECISIONS TO BE MADE.

If a Finding of No Significant Impact (FONSI) results from this EA, then a temporary planned deviation to the WSE would be considered as an appropriate action to improve the WSE.

1.7 SCOPING AND ISSUES.

Many scoping response letters were received during the scoping process. Many comments indicated support for increased flexibility to make low level pulse releases from Lake Okeechobee for environmental benefits. Scoping comments can be found in Appendix C, pertinent correspondence.

1.7.1 ISSUES EVALUATED IN DETAIL.

The following issues were identified to be relevant to the proposed action and appropriate for detailed evaluation:

Water Supply
Impacts to Lake and Estuarine Biota
Endangered and Threatened Species
Water Quality
Flood Control

1.7.2 ISSUES ELIMINATED FROM DETAIL ANALYSIS.

The following issues were not considered important or relevant to the proposed action:

Historic Properties
Navigation
Air Quality
Hazardous, Toxic and Radioactive Waste

1.8 PERMITS, LICENSES, AND ENTITLEMENTS.

This action will be coordinated with the Florida Department of Environmental Protection pursuant to the Coastal Zone Management Act, 16 U.S.C., 1451-1464, as amended, and will be consistent with the Florida Coastal Management Program.

2 ALTERNATIVES

This section describes in detail the no-action alternative and the proposed action. Then based on the information and analysis presented in the sections on the Affected Environment and the Probable Impacts, this section presents the beneficial and adverse environmental effects in comparative form, providing a clear basis for choice among the options for the decision maker and the public.

2.1 DESCRIPTION OF ALTERNATIVES.

2.1.1 NO ACTION (STATUS QUO)

The no action alternative is the existing Water Supply and Environment (WSE) regulation schedule that would continue to be used should no action be taken. It is sometimes referenced in this document as the “base” or “baseline”.

2.1.2 CLASS LIMIT ADJUSTMENT

The Class Limit Adjustment (CLA) lowers the classification limits of the tributary hydrologic conditions and the seasonal and multi-seasonal Lake Okeechobee Net Inflow Outlook (LONINO). Thus, the decision trees (*Figures 2 & 3*) will lead to more frequent releases. The decision trees, which utilizes three operational elements to evaluate the conditions in the lake and the regional system, would continue to be used for Lake Okeechobee operational decisions. The class limit adjustment would modify the thresholds to the lower classification limits called for by the decision trees for releases to the Water Conservation Areas (WCAs) and to the estuaries. More detailed information and the simulated performance of the CLA is presented in *Appendix B*.

2.2 PREFERRED ALTERNATIVE

The preferred alternative is 2.1.2, Class Limit Adjustment (CLA).

2.3 COMPARISON OF ALTERNATIVES

Table 1 lists alternatives considered and summarizes the major features and consequences of the proposed action and alternatives. See section 4.0 Environmental Effects for a more detailed discussion of impacts of alternatives.

Table 1: Summary of Direct and Indirect Impacts

ALTERNATIVE ENVIRONMENTAL FACTOR	Class Limit Adjustment	No Action Status Quo
PROTECTED SPECIES	No adverse impact to protected species.	No adverse impact to protected species.
FISH AND WILDLIFE RESOURCES	Benefits anticipated in the lake due to improved habitat quality, especially for sport fisheries. Reduces the occurrences of high damaging estuary flows, which reduces the potential for adverse impact to estuarine flora and fauna.	High lake levels could impact the lake's littoral zone vegetation resulting in adverse impacts to fish and wildlife habitat. The potential for higher lake stages could result in WSE prompting higher estuary flows. High flows could adversely impact estuarine biota.
VEGETATION	Lower lake stage would benefit the lake's littoral zone vegetation. Reduces the occurrences of high damaging estuary flows, which reduces the potential for adverse impact to estuarine flora.	High lake levels could impact the lake's littoral zone vegetation. The potential for higher lake stages could result in WSE prompting higher estuary flows. High flows could adversely impact estuarine biota.
WATER QUALITY	Benefits anticipated in shoreline areas of the lake where submerged plants occur.	Greater potential for high damaging estuary flows resulting in more turbid conditions in the estuaries.
RECREATION	No impact	No impact
AESTHETICS	Benefits anticipated due to reduced algal blooms in shoreline plant-dominated areas of the lake if decreased water depths result in increased plant growth.	Potential for algal blooms reducing aesthetics.

ALTERNATIVE ENVIRONMENTAL FACTOR	Class Limit Adjustment	No Action Status Quo
NAVIGATION	No impact	No impact
ECONOMICS	No impact	No impact
ESSENTIAL FISH HABITAT	May reduce adverse impact to estuarine flora and fauna due to reduction in high damaging estuary flows.	Potential for higher lake stages, which could result in WSE prompting higher estuary flows. High volume flows could adversely impact estuarine biota.
WATER SUPPLY	No impact	No impact
FLOOD PROTECTION	No impact.	No impact

3 AFFECTED ENVIRONMENT

The Affected Environment section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that are relevant to the decision to be made. It does not describe the entire existing environment, but only those environmental resources that would affect or that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the "no-action" alternative forms the base line conditions for determining the environmental impacts of the proposed action.

3.1 GENERAL ENVIRONMENTAL SETTING

Lake Okeechobee is a subtropical lake in south Florida with a surface area of 730 square miles and an average depth of 9 feet. As a result of this shallow depth, wind is a major influence on the lake. The lake has an extensive littoral zone that occupies about 25 percent of the lake's surface. Littoral vegetation occurs along much of the lake's perimeter, but is most extensive along the southern and western border (USACE, 2000a). The vegetation and cover types within the Lake Okeechobee region have been greatly altered during the last century. Historically, the natural vegetation was a mix of freshwater marshes, hardwood swamps, cypress swamps, pond apple forests, and pine flatwoods. At present, the littoral zone vegetation consists of many native plant species but also consists of many less desirable and invasive exotic species. The invasion of exotic vegetation has impacted the health and productivity of the littoral zone plant community. Anthropogenic disturbances such as altered hydrology and pollution, along with nutrients, can directly and indirectly affect the health of Lake Okeechobee.

The Caloosahatchee Estuary is a large system where the Caloosahatchee River freshwater mixes with the Gulf of Mexico. A shallow bay supporting seagrass beds with mud and sand flats throughout characterizes the lower region closest to the Gulf of Mexico. Mangroves are a dominant species occurring on undeveloped shorelines.

There are two forks of the St. Lucie Estuary, the North Fork and the South Fork, that flow together and then eastward to the Indian River Lagoon and Atlantic Ocean at the St. Lucie Inlet. Both estuaries attract a variety of commercial, recreational and educational activities such as fishing, boating, ecotourism, and sightseeing.

3.2 VEGETATION

Lake Okeechobee

The littoral zone of Lake Okeechobee occupies about 25 percent of the lake's surface (USACE, 2000a). The plant community consists of emergent, submerged and floating plants. Lake Okeechobee vegetation is important as it provides critical habitat for fish and wildlife and it helps improve near-shore water quality. Many invasive exotic plant species invade the littoral zone of Lake Okeechobee. These exotic species displace native vegetation, and in the process, reduce the natural habitat needed for fish and wildlife. Additionally, exotic plant species impede navigation and potentially create water quality problems.

St. Lucie and Caloosahatchee Estuaries

Submerged Aquatic Vegetation (SAV) such as tape grass (*Vallisneria Americana*), shoal grass (*Halodule wrightii*), and turtlegrass (*Thalassia testudinum*) are prominent plant species in the Caloosahatchee used as performance indicators to determine the desirable range and frequency of water flow. *Vallisneria* is used extensively in the Caloosahatchee River Estuary as an indicator species as it has been proven to be an excellent ecological representative for a wide variety of other biota for this area (USACE, 2000a). The SFWMD staff monitors the Caloosahatchee River Estuary to quantify the performance of these plant species. The performance of these species provides a measure of the success of hydrologic performance measures and management strategies used to meet them.

Plants are not used as indicator species in the St. Lucie Estuary. The flow and salinity envelopes in the St. Lucie Estuary are based on the salinity requirements of the American oyster (*Crassostrea virginica*).

3.3 THREATENED AND ENDANGERED SPECIES

Endangered and threatened species known to occur within the project area include:

COMMON NAME	SCIENTIFIC NAME	STATUS
Everglades snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E(CH)
Wood stork	<i>Mycteria americana</i>	E
West Indian manatee	<i>Trichechus manatus</i>	E(CH)
Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T
Okeechobee gourd	<i>Cucurbita okeechobeensis</i>	E

E = Endangered; T = Threatened; CH = Critical Habitat has been designated

Everglades Snail Kite

Lake Okeechobee and surrounding wetland are major nesting and foraging habitat, particularly the large marsh in the southwestern portion of the lake and the area southwest of the inflow of the Kissimmee River (USFWS, 1999b). The entire littoral zone and western shore of Lake Okeechobee are designated as critical habitat for the snail kite. Snail kites require foraging areas that are relatively clear and open in order to visually search for apple snails (USFWS, 1999b). Apple snails (*Pomacea paludosa*) are the main diet for the Florida population of snail kites. Lake Okeechobee apparently retains some suitable habitat for the snail kite, but recent surveys have shown a decline for nesting on Lake Okeechobee. For a complete species description, taxonomy, distribution, habitat requirement, management objectives, and current recovery status, reference the South Florida Multi-Species Recovery Plan (USFWS, 1999).

Wood Stork

The wood stork is listed as endangered by the USFWS and the FFWCC. Wood storks forage in freshwater marshes, seasonally flooded roadside or agriculture ditches, narrow tidal creeks, shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Wood storks feed almost entirely on fish between 2 and 25 cm in length.

West Indian manatee

The West Indian manatee has been recognized as an endangered species since 1967. Manatees are found throughout the waterways in south Florida, and frequently are found in Lake Okeechobee and the Okeechobee Waterway. Manatees feed on a variety of submergent, emergent and floating vegetations and usually forage in shallow grass beds adjacent to deeper channels.

Bald Eagle

Shorelines, such as the shorelines around Lake Okeechobee, the Okeechobee Waterway, and estuaries provide fishing and loafing perches, nest trees, and open flight paths for the bald eagle (USFWS, 1999b). Bald eagles are known to nest around the study area. The eagle is an opportunistic species, but primarily feeds on fish (USFWS, 1999b).

Eastern Indigo Snake

The eastern indigo snake is a large, black, non-venomous snake and occurs throughout the study area. This species is generally an upland species snake, occupying a wide variety of habitat.

Okeechobee Gourd

There are several localized sites along the southeastern shore of Lake Okeechobee, where this vine plant is found. Fluctuating lake levels are necessary for the continued survival and recovery of the gourd within and around Lake Okeechobee.

3.4 FISH AND WILDLIFE RESOURCES

Lake Okeechobee provides a wide variety of habitat for fish and wildlife including wading and migratory birds, mammals, amphibians, reptiles, and a large number of fish species. Drought and extreme high water can both be detrimental to the fish and wildlife resources of Lake Okeechobee. High flow releases from the lake can have adverse consequences in the St. Lucie and Caloosahatchee Estuaries. These effects were discussed in great detail in the Lake Okeechobee Regulation Study in 2000 (reference USACE, 2000a).

3.5 ESSENTIAL FISH HABITAT

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act of 1976 and the 1996 Sustainable Fisheries Act, an Essential Fish Habitat (EFH) Assessment is necessary for implementation of the Preferred Alternative. An EFH Assessment is a review of the proposed project and its potential impacts to EFH. The rules promulgated by the National Marine Fisheries Service (NMFS) in 1997 and 2002 further clarify EFH by definition as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.” *Waters* include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include areas historically used by fish where appropriate. *Substrate* includes sediment, hardbottom, structures underlying the waters, and any associated biological communities. *Necessary* means the habitat required to support a sustainable fishery and managed species’ contribution to a healthy ecosystem. *Spawning, breeding, feeding, or growth to maturity* covers all habitat types used by a species throughout its life cycle.

Only species managed under a federal fishery management plan (FMP) are covered (50 C.F.R. 600). The act requires federal agencies to consult on activities that may adversely influence EFH designated in the FMPs. The activities may have direct (e.g., physical disruption) or indirect (e.g., loss of prey species) effects on EFH and may be site-specific or habitat-wide. The adverse result(s) must be evaluated individually and cumulatively.

South Atlantic Fishery Management Council (SAFMC) has designated seagrass areas within the study area as EFH (**Table 2**). Impacts to EFH result in the loss of substrate used by managed species for spawning, nursery, foraging, and migratory/temporary habitats. Estuaries are areas of particular concern for shrimps,

red drum, and grouper. These species prefer estuarine inshore habitats such as seagrass beds for portions of their life history requirements.

Table 2 Essential Fish Habitat Areas in the Study Area

Estuarine Areas (Caloosahatchee River Estuary and St. Lucie Estuary)	Estuarine Emergent Vegetation
	Estuarine shrub/scrub (mangrove)
	Seagrass
	Intertidal flats
	Estuarine Water Column
	Algae

Source: South Atlantic Fisheries Management Council, 1998

In conformance with the 1996 amendment to the MSFCMA, the information provided in this EA will comprise the required EFH assessment. This EA will be coordinated with the NMFS Habitat Conservation Division and initiate consultation under the MSFCMA.

3.6 WATER QUALITY

Waters of Lake Okeechobee have been designated by the State of Florida as Class I Waters, suitable for potable water supplies, and Class III, recreation, propagation and maintenance of a health, well-balanced population of fish and wildlife

3.7 WATER SUPPLY

Lake Okeechobee supplies water for agricultural irrigation, municipalities, industry, Everglades National Park, regional groundwater control and for salinity control. The Caloosahatchee River (C-43) serves as a water supply for Lee County and the city of Ft. Myers.

3.8 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

A preliminary assessment indicated no evidence of hazardous, toxic or radioactive waste (HTRW) affecting this action.

3.9 AIR QUALITY

No significant sources of air quality pollutants are located in the Lake Okeechobee and Waterway vicinity.

3.10 NOISE

Ambient noise levels are low to moderate in the Lake Okeechobee region. The major noise producing sources are vehicular and boat traffic.

3.11 AESTHETIC RESOURCES

Lake Okeechobee, Caloosahatchee River Basin and the St. Lucie Estuary have several landscape features that are aesthetically appealing to tourists and local communities.

3.12 RECREATION RESOURCES

Lake Okeechobee and the St. Lucie and Caloosahatchee Estuaries are considered popular recreational resources in South Florida. Fishing, recreational boating, sightseeing, wildlife watching, camping and swimming are just a few of the recreational activities residents and visitors participate in. Lake Okeechobee is host to over 500 permitted bass fishing tournaments annually and ranks as the top bass fishing lake in the USA (Havens, et al., 2004a).

3.13 NAVIGATION

The Okeechobee Waterway connects Stuart on the Atlantic Ocean with Ft. Myers on the Gulf of Mexico. The waterway consists of 154 miles of navigation channel, including the lake itself. Commercial and recreational navigation via the Okeechobee Waterway take advantage of this shortcut across the Florida peninsula

3.14 WATER CONSERVATION AREAS (WCA)

The WCAs cover approximately 1,372 square miles and are located south of Lake Okeechobee and Everglades Agricultural Area. The WCAs are divided into three areas known as WCA 1 (also known as the Arthur R. Marshall Loxahatchee National Wildlife Refuge), WCA 2 (the smallest of the WCAs) and WCA 3, the largest of the WCAs covering approximately 915 square miles (USACE, 2000a).

The Water Control Plan for Lake Okeechobee (USACE, 200b) outlines the pulse release criteria for the WSE regulation schedule. The level of pulse release selected at a particular juncture of the WSE Operational Guidelines Decision Tree (Figures 3 & 4) takes into consideration a number of factors including water levels in the WCAs. Higher than desirable water levels in the WCAs should allow pulse releases

to be made to tidewater at lower lake levels, while lower than desired water levels in the WCAs may preclude or lessen regulatory discharges being made to tidewater (USACE, 2000a). This is particularly true while in Zone D of the WSE regulation schedule.

3.15 HISTORIC PROPERTIES

This action was coordinated in accordance with Section 106 of the *National Historic Preservation Act* of 1966, as amended, and 36 C.F.R., Part 800: *Protection of Historic Properties*. The State Historic Preservation Officer advises and assist the Corps in identifying historic properties (archaeological, architectural, and historical) listed, or eligible for listing, in the *National Register of Historic Places*, assessing the project's effects, and considering alternatives to avoid or minimize effects.

4 ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for the comparisons of the alternatives. See table 1 in section 2.0 Alternatives, for summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects.

4.1 GENERAL ENVIRONMENTAL EFFECTS

The performance of the CLA was simulated by using the South Florida Water Management Model (SFWMM v5.4.2). The SFWMM is a regional-scale, continuous simulation, hydrologic model that was developed and is maintained by the SFWMD. The SFWMM simulates the hydrology and water management of southern Florida from Lake Okeechobee to Florida Bay (Neidrauer, et al., 1998). The modeling results were the basis for comparison between the CLA alternative and the no action alternative (base). The environmental effects evaluation in this section is based on the simulation modeling results.

The proposed alternative (CLA) is a minor fine-tuning adjustment which, as demonstrated by simulation modeling, is expected to improve in-lake ecological benefits with minimal, if any, adverse impacts to the other lake management objectives.

It is also important to state that while the CLA is an enhancement that improves the performance of WSE over the long term, it is important to look at the 36-year model output of the Lake Okeechobee stage hydrograph to see that although CLA is an improvement in many years, it cannot control the lake stage during very wet periods (**Figures 4, 5, and 6**). CLA does improve the ability to make releases at lower levels, while in Zone D, and there are years when this prevents the lake stage from rising into Zone C or Zone B. For example 1979 and 1980 (**Figure 5**) shows CLA reduces the amount of time in Zone C, and 1983 shows a reduction in the amount of time in Zone B. Although CLA shows an overall improvement, there are years when a rain event occurs late in the wet season, followed by a wetter than normal dry season, when the Lake Okeechobee stage may still rise into the higher regulatory zones; for example 1969-70 (**Figure 4**) and 1994-95 (**Figure 6**). Of greatest benefit from CLA are the years when a reduction in the lake stage could help prevent a tropical or other rain event from causing the lake stage to rise above Zone D; for example 1966 (**Figure 4**), 1979-80 and 1982 (**Figure 5**) and 1993 (**Figure 6**).

4.2 VEGETATION

4.2.1 PROPOSED ACTION, CLASS LIMIT ADJUSTMENT

Lake Okeechobee

Modeling results (reference Water Resources Advisory Commission Lake Okeechobee Workshop in Appendix B, pages 22-24) indicate that the CLA alternative reduces the occurrence of lake stages above 17 feet compared to the base, and also improves the seasonal variation of lake stages. These responses are anticipated to have benefits for submerged aquatic plants in the lake's shoreline and littoral areas, and this in turn is expected to have benefits for fish that use those plant communities as essential spawning and foraging habitat (Havens, et al., 2004a). Increased submerged plant biomass also is known to be associated with improved water quality, because plants and their associated periphyton remove nutrients from the water, which lessens the risk of shoreline algal blooms. (Havens, et al., 2004b).

St. Lucie

The St. Lucie Estuary performance was evaluated by counting the number of times during the 36-year (432 months) simulation that the average monthly flows to the estuary exceeded specific flow limits. The summary of the mean monthly flow envelope can be found below in **table 3**.

Table 3. St. Lucie Estuary Mean Monthly Flow Envelope Summary

Total inflows to SLE (basin runoff from C23,C24, C44, etc, plus LOK releases) (mean monthly cfs)	BASE (months)	CLA (months)	CLA-BASE (months)
< 350 cfs (less is better)	136	129	-7 (better)
350-2000 cfs (more is better)	231	235	+4 (better)
2000-3000 cfs (less is better)	33	40	+7 (worse)
> 3000 cfs (less is better)	32	28	-4 (better)

Source: SFWMD Technical Report (Appendix B)

As table 3 indicates, there is an increase in the moderate discharges to the St. Lucie Estuary. When low to moderate releases are done over a longer time-frame and in an estuarine-sensitive manner, then there may be some avoidance of the higher damaging discharges. Under the CLA action, there would be slightly less damaging discharges greater than 3,000 cfs (4 less than the base, or no action alternative). The simulation results do not indicate any adverse impact to oysters for the St. Lucie Estuary.

Caloosahatchee River Estuary

The Caloosahatchee Estuary performance was evaluated by counting the number of times during the 36-year (432 months) simulation that the average monthly flows to the estuary exceeded specific flow limits.

Table 4. Caloosahatchee Estuary Mean Monthly Flow Envelope Summary

Inflows to CE at S-79 (C43 basin runoff plus LOK releases) (mean monthly cfs)	BASE (months)	CLA (months)	CLA-BASE (months)
< 300 cfs (less is better)	156	149	-7 (better)
300-2800 cfs (more is better)	207	207	0
2800-4500 cfs (less is better)	37	42	+5 (worse)
> 4500 cfs (less is better)	32	34	+2 (worse)

Source: SFWMD Technical Report (Appendix B)

The results of the CLA simulation for the Caloosahatchee are rather complex. The modeled differences are small. As compared to the base case, the CLA simulation shifts 7 months from the low flow category to the moderate and high flow categories. This represents a change of 1.6% (7 of 432 months). The additional seven months of discharge (> 2800 cfs) would have adverse effects on seagrasses in the lower more marine end of the estuary. On the other hand, the seven fewer months of flows below 300 cfs would benefit tape grass beds, *Vallisneria americana*, in the upper brackish region of the estuary. These beds are sensitive to high salinity events caused by intrusion of ocean water. These intrusions occur when flows fall below 300 cfs at the Franklin Lock and Dam. The decrease in low flows (<300 cfs) versus the increase in moderate to high flows (>2800 cfs) could potentially offset each other. Since the modeled differences are small and potentially offsetting, neither benefits or adverse impacts could be determined.

4.2.2 NO ACTION ALTERNATIVE (STATUS QUO)

Tables 3 and 4 compare the mean monthly flows with the no action alternative (base) and with the CLA alternative. A key feature of the WSE schedule is the lower operational zone, labeled Zone D (**reference Figure 7**). This zone allows the operational flexibility to release water to the Everglades Water Conservation Areas (WCAs) and estuaries, to lower lake water levels, which minimizes adverse impacts to the lake's littoral zone. If very wet conditions exist or are expected over the next six months, releases to the WCAs and pulse releases to tidewater are initiated in Zone D (**Figures 2, 3 and 7**). However, since the first releases made under WSE, in July 2002, it has been observed that the schedule called for no releases to the estuaries during a long period from February to June 2003. As documented in

Appendix B (SFWMD technical report), the lake stage at the beginning of the 2003 wet season was approximately 14.6 ft. NGVD (in the middle of Zone D). August and September inflows pushed the lake stage into Zone C and for a short period of time into Zone B. To regulate the high lake stage, large damaging discharges to both estuaries were required. If a moderately high lake stage exists when a seasonal net inflow forecast prompts WSE to make no lake releases prior to the wet season, then a higher lake stage is the result, which can be detrimental to the lake's vegetation. **Appendix B** goes into more detail comparing the no action alternative with the CLA alternative.

It is important to state that the WSE (no action alternative) schedule was adopted in 2000 because it appeared to provide substantial benefits for Lake Okeechobee's littoral zone and marsh. In its short existence, the WSE has demonstrated much better performance as compared with the previous regulation schedule, Run 25. However, there have been several opportunities when water managers desired to make releases to tidewater, but the decision tree did not lead to that action. Low-level pulse releases would have provided relief to Lake Okeechobee's shoreline vegetation and littoral zone *without causing adverse effects* to downstream estuaries.

4.3 THREATENED AND ENDANGERED SPECIES

4.3.1 PROPOSED ACTION, CLASS LIMIT ADJUSTMENT

Everglades Snail Kite

The snail kite is sensitive to the ecological health of Lake Okeechobee's littoral zone. It is expected that the CLA will improve conditions in the lake's littoral zone, resulting in benefits to habitat conditions needed for the snail kite. As such, implementation of the CLA would not adversely impact the Everglades snail kite or adversely affect the designated critical habitat of this species. When compared to the WSE, the CLA would be more beneficial to habitat conditions in the littoral zone.

Wood Stork

The potential improvement to conditions of the lake's littoral zone should benefit a variety of wading birds, including the wood stork. This alternative would not adversely affect the wood stork.

West Indian manatee

There would be no adverse effect on habitat conditions for the manatee as a result of this action. As such, there would be no effect to this species as a result of the proposed action.

Bald Eagle

The potential improvement to conditions of the lake's littoral zone, may result in enhanced productivity of fish in the lake. Foraging conditions may be slightly improved for the eagle. This action would not adversely affect the bald eagle.

Eastern Indigo Snake

The action will not likely affect the indigo snake, which primarily inhabits upland. The project does not include any changes to the water regulation infrastructure around the lake, such as the Herbert Hoover Dike, where the snake may be found.

Okeechobee Gourd

The CLA action improves in-lake performance. As such, there would be a potential benefit to listed species, such as the Okeechobee Gourd, where a lower lake stage is crucial for its survival. There would be a slight benefit to this species.

4.3.2 NO ACTION ALTERNATIVE (STATUS QUO)

The USFWS concluded during coordination of the WSE that expected improvements on habitat conditions due to WSE would likely benefit the Okeechobee gourd, bald eagle, wood stork, and the Everglades snail kite in the vicinity of Lake Okeechobee (USACE, 2000a). This alternative would not adversely impact endangered or threatened species under the jurisdiction of the USFWS.

4.4 FISH AND WILDLIFE RESOURCES

4.4.1 PROPOSED ACTION, CLASS LIMIT ADJUSTMENT

Lake Okeechobee

As was the conclusion with vegetation (4.2.1) the effects of the CLA are expected to be beneficial to the fish and wildlife resources of Lake Okeechobee. Compared to the base, or no action alternative, the CLA alternative would reduce the occurrence of lake stages above 17 ft. and also improve the seasonal variation of lake stages. These responses would benefit aquatic plants in the lake's shoreline and littoral zone areas, which would be a benefit for fish and wildlife using those plant communities for spawning and foraging habitat.

Caloosahatchee and St. Lucie Estuaries

Estuarine scientists from the SFWMD are, and would continue to be, consulted to determine the needs of the Caloosahatchee River Estuary and St. Lucie River Estuary prior to releases to tidewater and to determine the status of the individual estuarine ecosystems. Decisions regarding timing of releases and amount (level of

release) would be determined based on the status of the individual estuarine ecosystems, as well as consideration of local runoff contributions.

The CLA simulation results have shown that CLA nearly doubles (from 17% to 34%) the amount of time releases to the estuaries are made when in Zone D. Even though there would be an increase in the number of pulse releases to the estuaries, the increased flow to the estuaries does not necessarily indicate the performance of the estuaries is adversely affected. Estuaries can also be impacted by high salinity, especially during the dry periods. Some of the increased flow as a result of the CLA occurs during the dry periods when the estuaries would benefit from the low-level pulse releases. During these times, the estuaries may benefit from freshwater releases to attain the preferred salinity envelope.

The SFWMD estuary staff use oysters as indicator species for the health of the St. Lucie Estuary. In particular, flow and salinity envelopes are based on the salinity requirements of the American oyster (*Crassostrea virginica*). When estuary flows are too low and salinities are high, adult oysters are more susceptible to marine predators and to parasitic infections. At high estuary flows, oysters are progressively stressed physiologically by declining salinity.

Oysters can tolerate salinities resulting from flows in the 350 to 2,000 cfs range. In the 2,000 – 3,000 cfs range, oysters become stressed by low salinity and at flows above 3,000, mortality can occur. At flows below 350 cfs, salinity increases in the St. Lucie and oysters are more susceptible to marine predators and parasitic infections.

In the Caloosahatchee SFWMD staff use the condition of submerged grass beds as indicators of ecosystem health. Beds of tape grass, *Vallisneria americana*, located near the head of the estuary are sensitive to high salinity. Damaging salinities occur when monthly average discharge at the Franklin Lock and Dam falls below 300 cfs. At the mouth of the estuary, seagrasses, such as shoal grass, *Halodule wrightii*, prefer marine conditions. High discharges (> 2800 cfs) lower salinity and damage these beds. Flows in the range between 300 and 2800 cfs result in salinity conditions that are tolerable for both type of grass.

The CLA improves the likelihood of making smaller releases more often, as opposed to stressful high damaging estuary releases. Smaller releases are preferred because the higher volume releases can have adverse effects to estuarine biota. The CLA would allow water managers to have the enhanced flexibility to allow for more environmentally sensitive management of discharges to the estuaries. Reference section 4.5.1 for more detail. Additionally, more information on estuary performance for the CLA alternative can be found in **Appendix B**.

4.4.2 NO ACTION ALTERNATIVE (STATUS QUO)

The no action alternative and its effects on fish and wildlife resources would be similar to the effects on vegetation (reference section 4.2.2). High discharges result in high volumes of water that forces saline water out of the estuaries. It has been well documented (Chamberlain and Doering 1998a, 1998b and 1999; Mozzotti, *et al.* 2003;) that an optimum range of freshwater inflow is necessary for the survival of many estuarine fish, ichthyoplankton, zooplankton, and invertebrates. Species that are considered indicator organisms for estuarine health, such as oysters, could be disrupted during their reproductive stage by drastic changes to salinity.

4.5 ESSENTIAL FISH HABITAT

4.5.1 PROPOSED ACTION, CLASS LIMIT ADJUSTMENT

Adverse impacts to essential fish habitats as listed in Table 2 (Section 3.5) are not expected from the proposed action. The Caloosahatchee River and St. Lucie Estuaries conditions will continue to be monitored and evaluated. When the WSE regulation schedule requires that water must be released from the lake to the estuaries, technical experts on estuarine ecology will provide scientific input with regard to the effects of various discharge volumes. It has been well documented (Chamberlain and Doering 1998a, 1998b and 1999; Mozzotti, *et al.* 2003;) that an optimum range of freshwater inflow is necessary for the survival of many estuarine fish, ichthyoplankton, zooplankton, and invertebrates. On a weekly or more frequent basis, water managers and scientific staff review results from decision trees in the WSE regulation schedule to determine the amounts of freshwater to release from Lake Okeechobee. Estuary conditions, including estuary salinity ranges and biological indicators, are discussed and considered prior to water releases. Implementing the CLA to the WSE will not change any of these parameters, nor will it change the Adaptive Protocols for Lake Okeechobee Operations. The CLA will allow for lower to moderate pulse releases in an estuarine-sensitive manner and potentially reduce the need for high level regulatory releases that could adversely impact estuarine biota. Additional information on vegetation and fish and wildlife resources can be found in Sections 4.2.1 and 4.4.1.

The proposed action is completely operational, and no structural features, construction, modification of existing structures, or land acquisition is being proposed. This action will not adversely affect essential fish habitat or the species managed by the South Atlantic Fishery Management Council (SAFMC).

4.5.2 NO ACTION ALTERNATIVE (STATUS QUO)

Reference section 4.2.2 and 4.4.2.

4.6 HISTORIC PROPERTIES

The State Historic Preservation Officer (SHPO) indicated that no significant archaeological or historical resources are recorded within the project area (reference letter dated May 21, 2004, **Appendix C**). As such, there would be no affect to historic properties.

4.7 SOCIO-ECONOMIC

The primary land use surrounding Lake Okeechobee is agriculture. Sugar cane plantations, cattle ranching, citrus, vegetable production and ornamental nurseries make up the majority of agriculture land use in this area.

Recreational and sport fishing, along with commercial fishing, are major activities associated with Lake Okeechobee, which brings revenues to the marinas, fishing guides, hotels, and support industries around the lake. Lake Okeechobee also provides a wide variety of water and land based recreation including boating, airboating, picnicking, camping hunting, and hiking along the Lake Okeechobee Scenic Trail.

A full economic evaluation was completed for the WSE as part of the EIS documentation. The evaluation focused on agricultural and urban water supply, recreation, navigation, and commercial fishing. As indicated in the evaluation, potential adverse effects on the economy are not anticipated. As such, it is unlikely that the proposed operational change to the WSE would result in any significant economic change.

The St. Lucie and Caloosahatchee Estuaries also contribute significantly to the regional and state economy. No adverse socio-economic impacts to the estuary regions are anticipated by the proposed action.

4.8 AESTHETICS

The proposal would not adversely impact this value. The nature of this action is not visible or impacting to area aesthetics.

4.9 RECREATION

The proposed action would not adversely affect recreation.

4.10 WATER SUPPLY

The CLA performance relative to water supply is described in detail in **Appendix B**. Water supply performance of the CLA is not expected to significantly change compared to the base, or no action alternative. The CLA would not adversely impact water supply performance.

4.11 NAVIGATION

This action would not impede navigation through the Okeechobee Waterway or the Intracoastal Waterway.

4.12 WATER QUALITY

Potential benefits anticipated in shoreline areas of the lake where submerged plants occur. Water quality conditions in the estuaries may have a positive affect on salinity due to the potential increase in low-level releases from the lake during dry periods.

4.13 FLOOD PROTECTION

To evaluate flood protection of the preferred alternative, CLA, reference figure 11 in the SFWMD Technical Report in Appendix B. Figure 11 shows a performance measure that compares the maximum lake stage and the number of days the stage exceeds 16.5 ft, NGVD, during the beginning of the peak of the hurricane season. As compared to the base, the CLA simulation lowers the peak stage by over 0.55 ft., and reduces the number of days above 16.5 ft. from 17 to 3 (SFWMD Technical Report, *Appendix B*).

4.14 WATER CONSERVATION AREAS (WCA)

Several measures of performance for the Water Conservation Areas (WCAs) were evaluated by SFWMD staff. Hydroperiod differences relative to the Natural System Model were for the most part, not affected by CLA (reference *Appendix B* for more detail). However, there was a slight improvement, an extended hydroperiod, in Northern WCA-3A with the CLA alternative. CLA produced improved habitat suitability for wading birds relative to the Base (SFWMD Technical Report, *Appendix B*).

4.15 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

A preliminary assessment indicated no evidence of hazardous, toxic or radioactive waste (HTRW) affecting this action.

4.16 AIR QUALITY

Due to the operational nature of this action, there would be no affect on air quality.

4.17 NOISE

With the implementation of the proposed action, there would be no affect on existing or future noise levels.

4.18 NATIVE AMERICANS

No impact to Native American resources.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. One example of an irreversible commitment might be the mining of a mineral resource. An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resources as they presently exist are lost for a period of time. An example of an irretrievable loss might be where a type of vegetation is lost due to road construction.

As there is no proposed construction or alteration of existing features or landscape, there would be no irreversible or irretrievable commitment of resources as a result of this action.

4.20 COMPATIBILITY WITH FEDERAL, STATE, AND LOCAL OBJECTIVES

This action is compatible with Federal, State, and local objectives.

4.21 CONFLICTS AND CONTROVERSY

There are no unresolved issues. Concerns expressed by commenting Federal, State, and local governments and interested groups will be addressed in the final environmental assessment.

4.22 CUMULATIVE IMPACTS

The preferred alternative proposes no adverse impact to protected species, water quality, water supply or natural resources. The changes proposed by the CLA are minor and relatively easy to implement. The increased flexibility to implement this action will provide benefits to Lake Okeechobee without adversely impacting the performance of other lake management objectives.

4.23 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

4.23.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and this Environmental Assessment has been prepared. The project is in compliance with the National Environmental Policy Act.

4.23.2 ENDANGERED SPECIES ACT OF 1973

Consultation was initiated with National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) by letters dated September 10, 2004. This action was fully coordinated under the Endangered Species Act and is in full compliance with the Act.

4.23.3 FISH AND WILDLIFE COORDINATION ACT OF 1958

During the Lake Okeechobee Regulation Schedule Study, the WSE schedule was coordinated with the U.S. Fish and Wildlife Service (USFWS). As a result of the coordination, a Fish and Wildlife Coordination Act Report (CAR) dated October 1999 was prepared and submitted by the USFWS. The preferred action (CLA) in this EA falls within the scope of the existing CAR. As such, the 1999 CAR will apply to the temporary deviation. This EA was fully coordinated with the USFWS for comment. The proposed action is in compliance with the Act.

4.23.4 NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

(PL 89-665, the Archeology and Historic Preservation Act (PL 93-291), and executive order 11593) Consultation with the Florida State Historic Preservation Officer (SHPO), has been conducted in accordance with the National Historic Preservation Act, as amended; the Archeological and Historic Preservation Act, as amended and Executive Order 11593. SHPO consultation was initiated April 8, 2004. In a May 21, 2004 response, the SHPO indicated that no significant archaeological or historical resources are located within the project area. The project will not affect historic properties included in or eligible for inclusion in the National Register of Historic places. The project is in compliance with each of these Federal laws.

4.23.5 CLEAN WATER ACT OF 1972

The proposed action is in compliance with this act. As the proposed action is strictly of an operational nature, and does not involve any construction activity, water quality certification from the State of Florida is not required. Furthermore, as there are no structural components contained in the proposed action and no dredge and fill operations being considered, a Section 404(b) Evaluation is not appropriate.

4.23.6 CLEAN AIR ACT OF 1972

No air quality permits would be required for this action.

4.23.7 COASTAL ZONE MANAGEMENT ACT OF 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this report as *Appendix C*. State consistency review was performed during the coordination of the draft EA and the State has determined that the project is consistent with the Florida Coastal Zone Management Program.

4.23.8 FARMLAND PROTECTION POLICY ACT OF 1981

Project activities will not affect agriculture lands within the project area. The proposed action recommends a temporary deviation to the existing lake regulation schedule and will not impact existing or future agricultural or associated urban water supply. This act is not applicable.

4.23.9 WILD AND SCENIC RIVER ACT OF 1968

The Northwest Fork of the Loxahatchee River is designated a Wild and Scenic River. This resource is not expected to be adversely impacted by the proposed action. The study is in full compliance with this act.

4.23.10 MARINE MAMMAL PROTECTION ACT OF 1972

The proposed action is operational and does not involve construction activities; there would not be any adverse impact to marine mammals in the area. Therefore, this action is in compliance with the Act.

4.23.11 ESTUARY PROTECTION ACT OF 1968

The Indian River Lagoon and Charlotte Harbor are part of the National Estuary Program established by Section 320 of the Clean Water Act. This action would not adversely affect these estuaries. As such, the action is in compliance with this Act.

4.23.12 FEDERAL WATER PROJECT RECREATION ACT

The effects of the proposed action on outdoor recreation have been considered. Benefits to fishing, boating and wildlife viewing should be accrued by implementation of the proposed action. Therefore, the action is in compliance with this act.

4.23.13 FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976

This action is being coordinated with the National Marine Fisheries Service (NMFS) and will be in compliance with the act.

4.23.14 SUBMERGED LANDS ACT OF 1953

The project would occur on submerged lands of the State of Florida. The project has been coordinated with the State and is in compliance with the act.

4.23.15 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

There are no designated coastal barrier resources in the project area that would be affected by this project. These acts are not applicable.

4.23.16 RIVERS AND HARBORS ACT OF 1899

The proposed work would not obstruct navigable waters of the United States. The project is in full compliance.

4.23.17 ANADROMOUS FISH CONSERVATION ACT

Anadromous fish species would not be affected. The project has been coordinated with the National Marine Fisheries Service and is in compliance with the act.

4.23.18 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

No migratory birds would be affected by project activities. The project is in compliance with these acts.

4.23.19 MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

This act is not applicable. Ocean disposal of dredged material is not proposed as a part of the proposed action.

4.23.20 MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

Coordination of this Environmental Assessment (EA) by cover letter dated September 10, 2004, constitutes initial consultation with the National Marine Fisheries Service under provisions of this Act. Based on analysis discussed in this

EA, the Corps has determined that the proposed action would not adversely affect the essential fish habitat of species managed under this Act.

4.23.21 E.O. 11990, PROTECTION OF WETLANDS

No wetlands would be affected by project activities. This project is in compliance with the goals of this Executive Order.

4.23.22 E.O. 11988, FLOOD PLAIN MANAGEMENT

The project is in the base flood plain (100-year flood) and has been evaluated in accordance with this Executive Order. Project is in compliance.

4.23.23 E.O. 12898, ENVIRONMENTAL JUSTICE

The proposed action would not result in adverse health or environmental effects. Any impacts of this action would not be disproportionate toward any minority. The activity does not (a) exclude persons from participation in, (b) deny persons the benefits of, or (c) subject persons to discrimination because of their race, color, or national origin. The activity would not impact "subsistence consumption of fish and wildlife".

4.23.24 E.O. 13089, CORAL REEF PROTECTION

The proposed action would not result in adverse impacts to coral reef ecosystems. No coral reef habitats exist within or near the project area. This act is not applicable.

4.23.25 E.O. 13112, INVASIVE SPECIES

This action does not authorize, fund, or carry out action that might spread or introduce invasive species.

5 LIST OF PREPARERS AND REVIEWERS

NAME	DISCIPLINE	ROLE/RESPONSIBILITY
Yvonne Haberer	Biologist, USACE	Environmental Coordination; Document Preparer
David McCullough	Archeologist, USACE	Cultural Resources
Tiphannie Taylor	Engineer, USACE	Water Management
Susan Sylvester	Engineer, USACE	Water Management
John Zediak	Chief, Water Management and Meteorology Section, USACE	Reviewer
Carl Dunn	Engineer and Project Manager, USACE	Reviewer
Brooks Moore	Attorney, USACE	Reviewer
Ivan Acosta	Environmental Engineer, Team Leader, USACE	HTRW Evaluation and Reviewer
Susan Gray	Director, Lake Okeechobee Division, SFWMD	Reviewer
Cal Neidrauer	Engineer, Water Control Operations Section, SFWMD	CLA Technical Document and Reviewer
Karl Havens	Environmental Scientist, SFWMD	Evaluator of Lake performance measures and Reviewer
Peter Doering	Environmental Scientist, SFWMD	Evaluator of Estuary performance measures and Reviewer
Luis G. Cadavid	Engineer, Office of Modeling, SFWMD	Modeler
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Jayantha Obeysekera	Engineer, Office of Modeling, SFWMD	Modeler
Paul Trimble	Engineer, Office of Modeling, SFWMD	Modeler
Walter Wilcox	Engineer, Office of Modeling, SFWMD	Modeler

6 PUBLIC INVOLVEMENT

6.1 SCOPING AND DRAFT EA

A scoping letter dated April 8, 2004 was issued for the proposed action. A draft EA/FONSI dated August 2004 was circulated for public coordination.

6.2 AGENCY COORDINATION

A copy of the draft EA was coordinated with Federal, State, and local agencies. Many agencies commented as a result of the draft EA/FONSI. Comments and agency coordination letters can be found in ***Appendix C***.

6.3 LIST OF RECIPIENTS

Copies of the draft EA/FONSI was circulated to Federal, State, local agencies, and interested groups for review and comment. A mail list of those recipients is attached in ***Appendix C***. The EA/FONSI is also posted to the Corps' website under "Lake Okeechobee Regulation, Temporary Deviation to the WSE" at <http://planning.saj.usace.army.mil/envdocs/envdocsb.htm>.

6.4 COMMENTS RECEIVED AND RESPONSE

EA comments received, and responses to those comments, are included in ***Appendix C, Pertinent Correspondence***.

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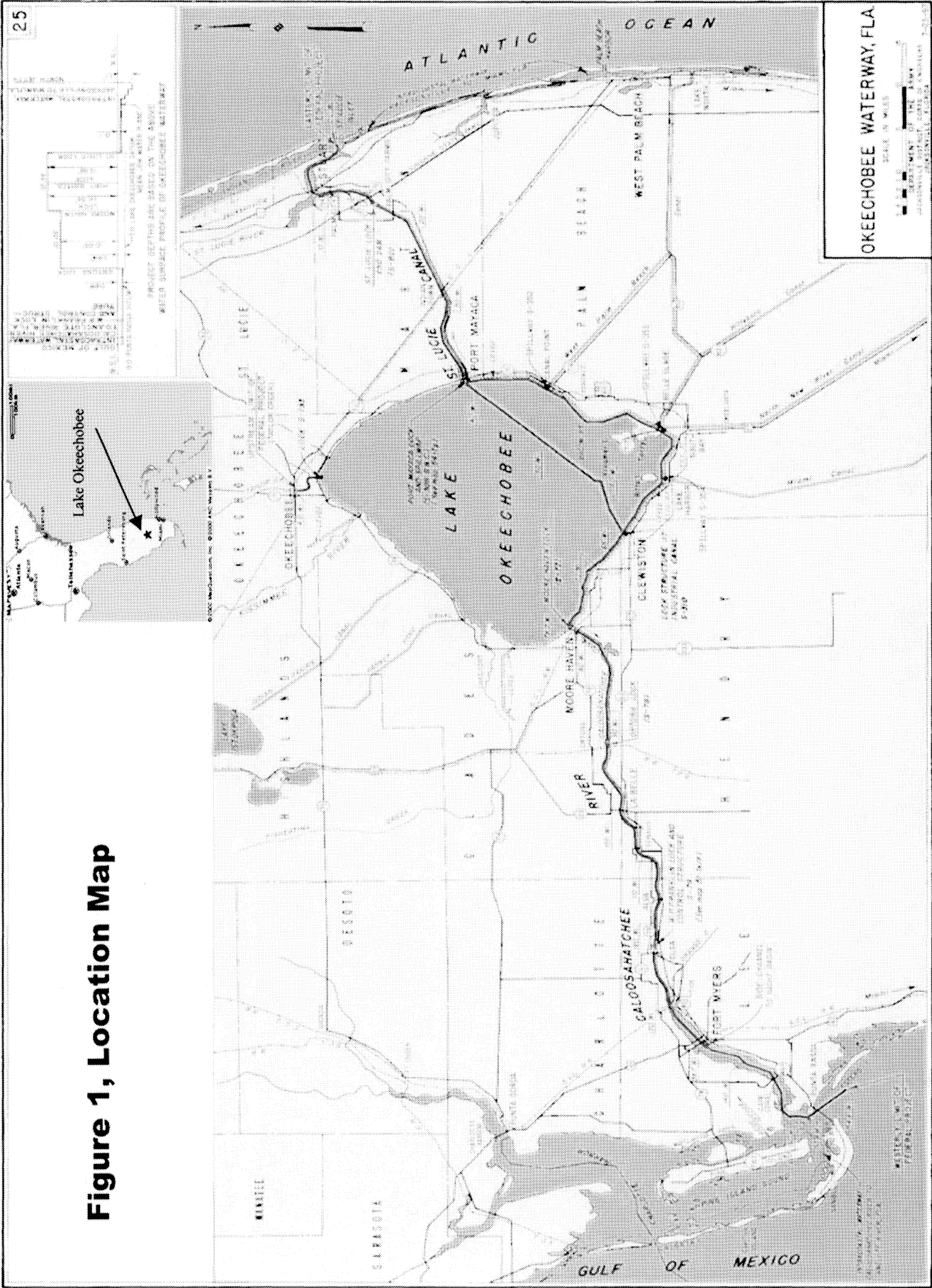
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FIGURES

Figure 1, Location Map



WSE Operational Guidelines Decision Tree

Part 1: Define Lake Okeechobee Discharges to the Water Conservation Areas

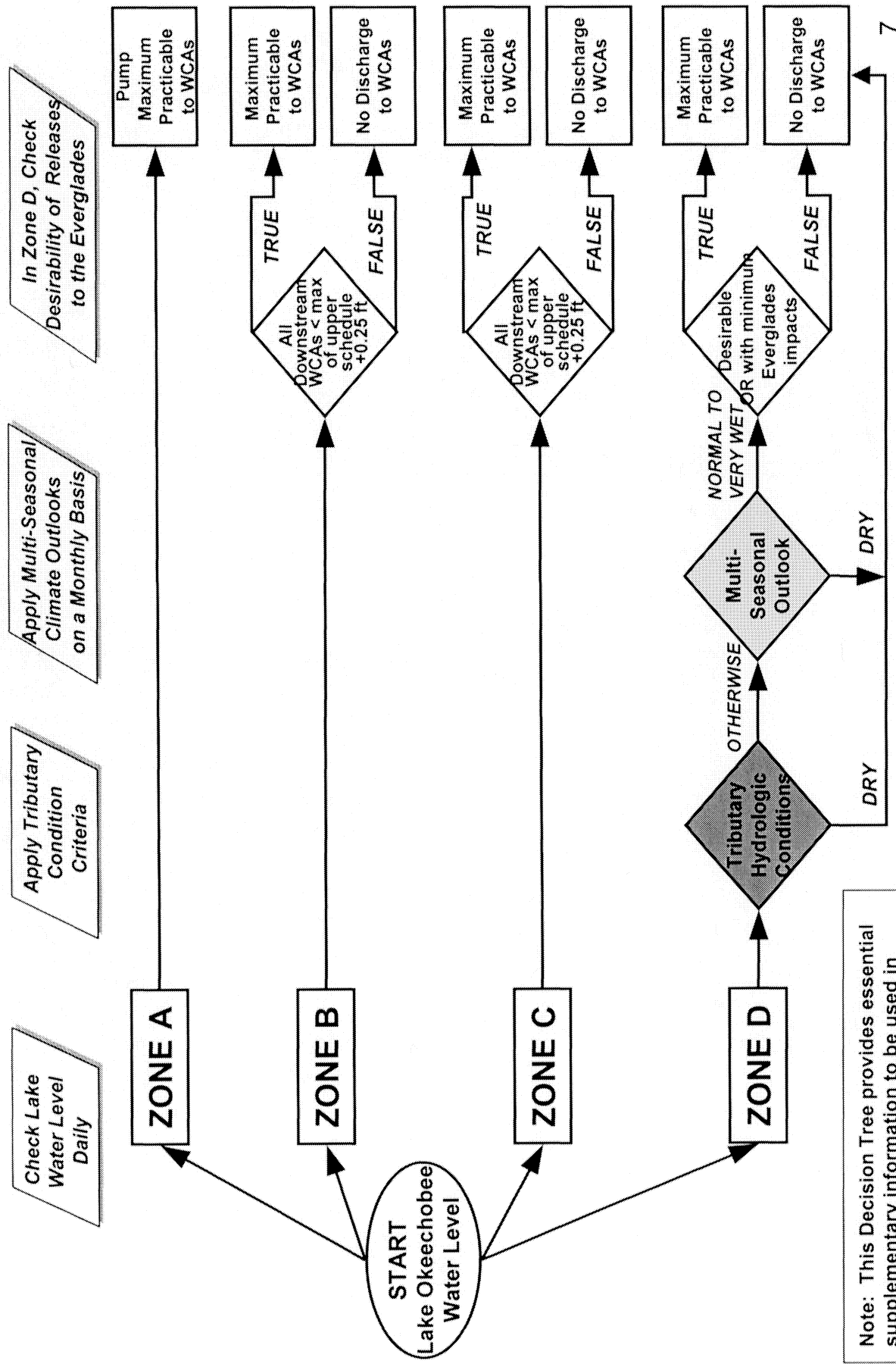
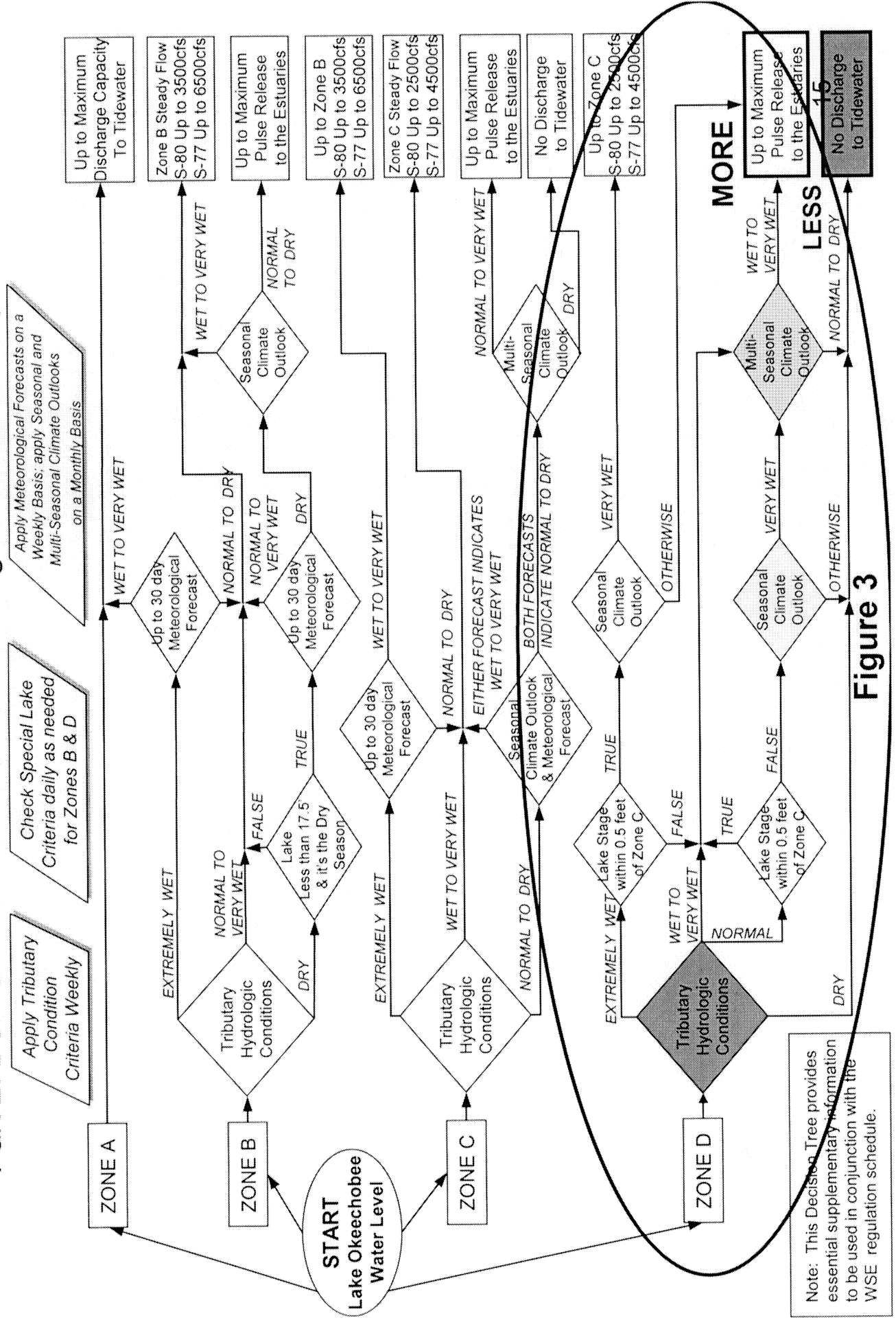


Figure 2

WSE Operational Guidelines Decision Tree

Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)



Lake Okeechobee Simulated Stage

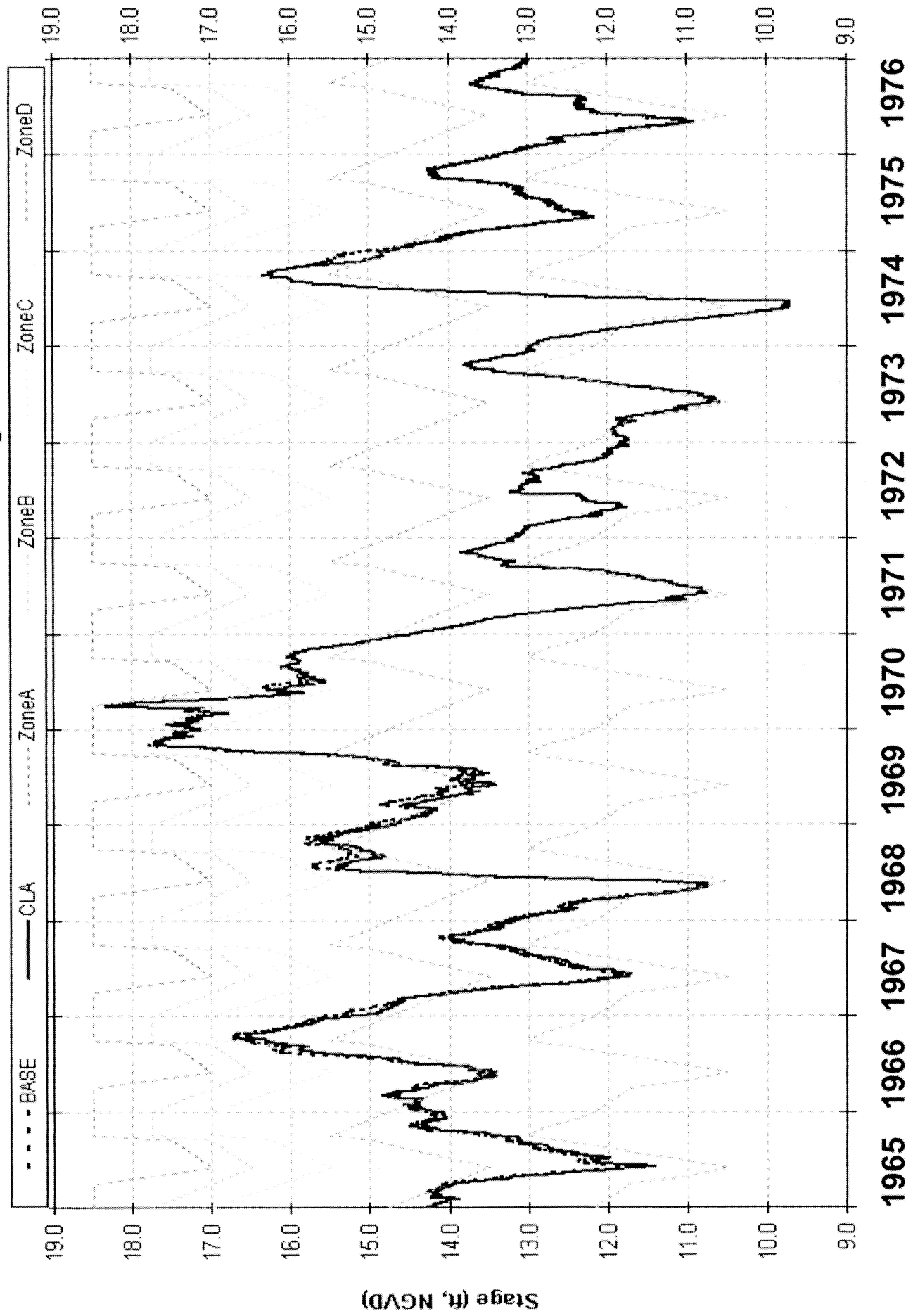


Figure 4

Lake Okeechobee Simulated Stage

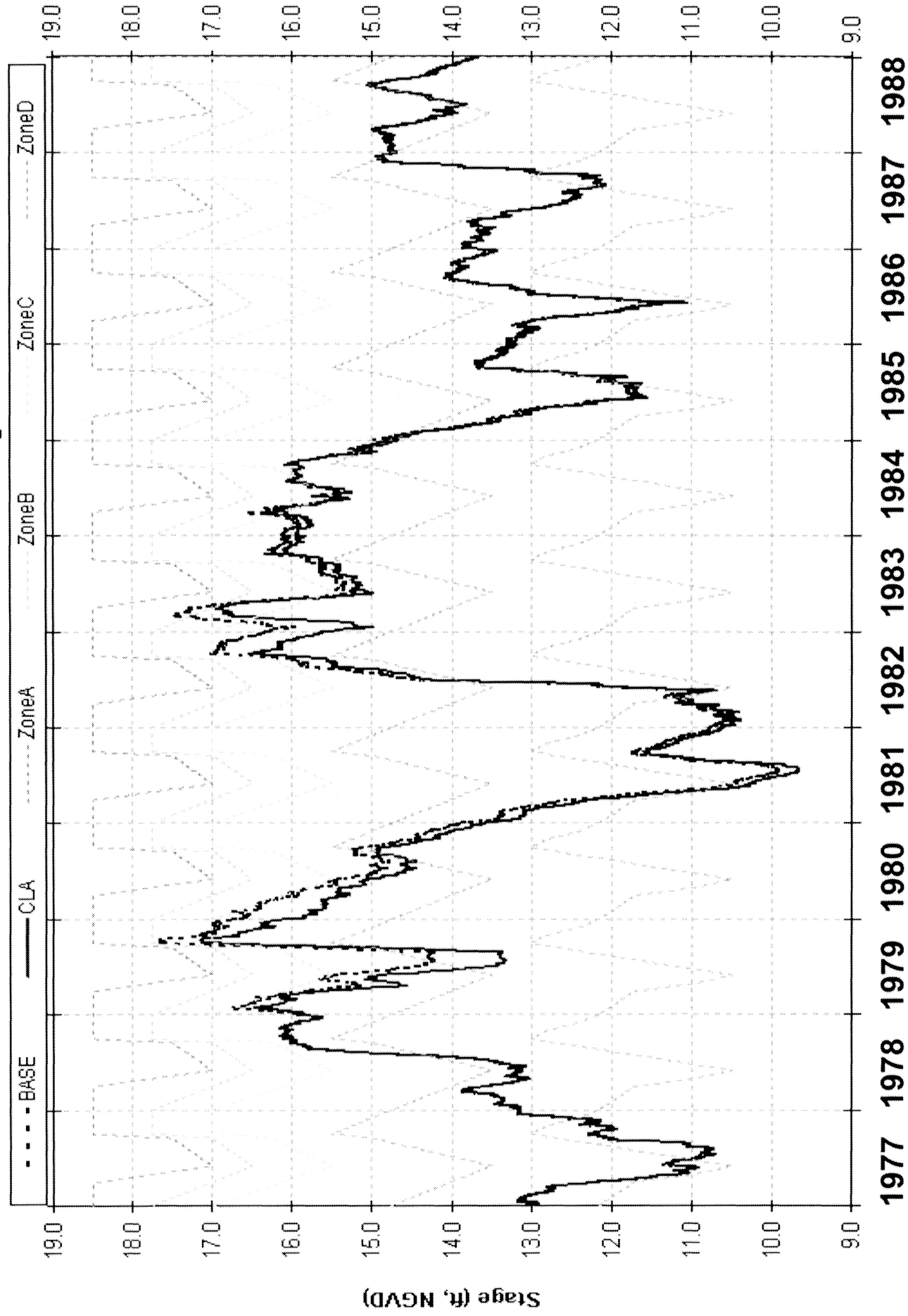


Figure 5

Lake Okeechobee Simulated Stage

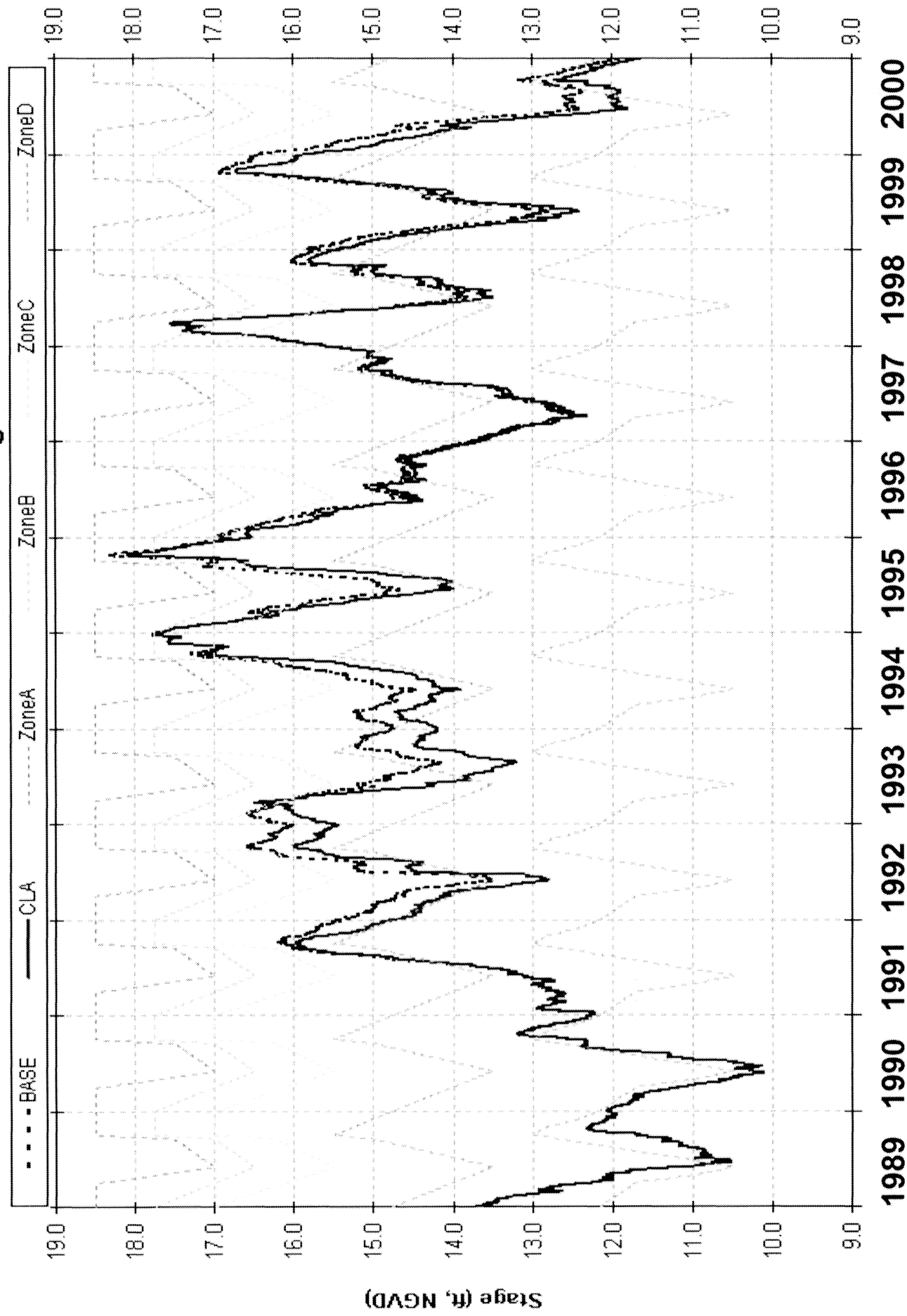
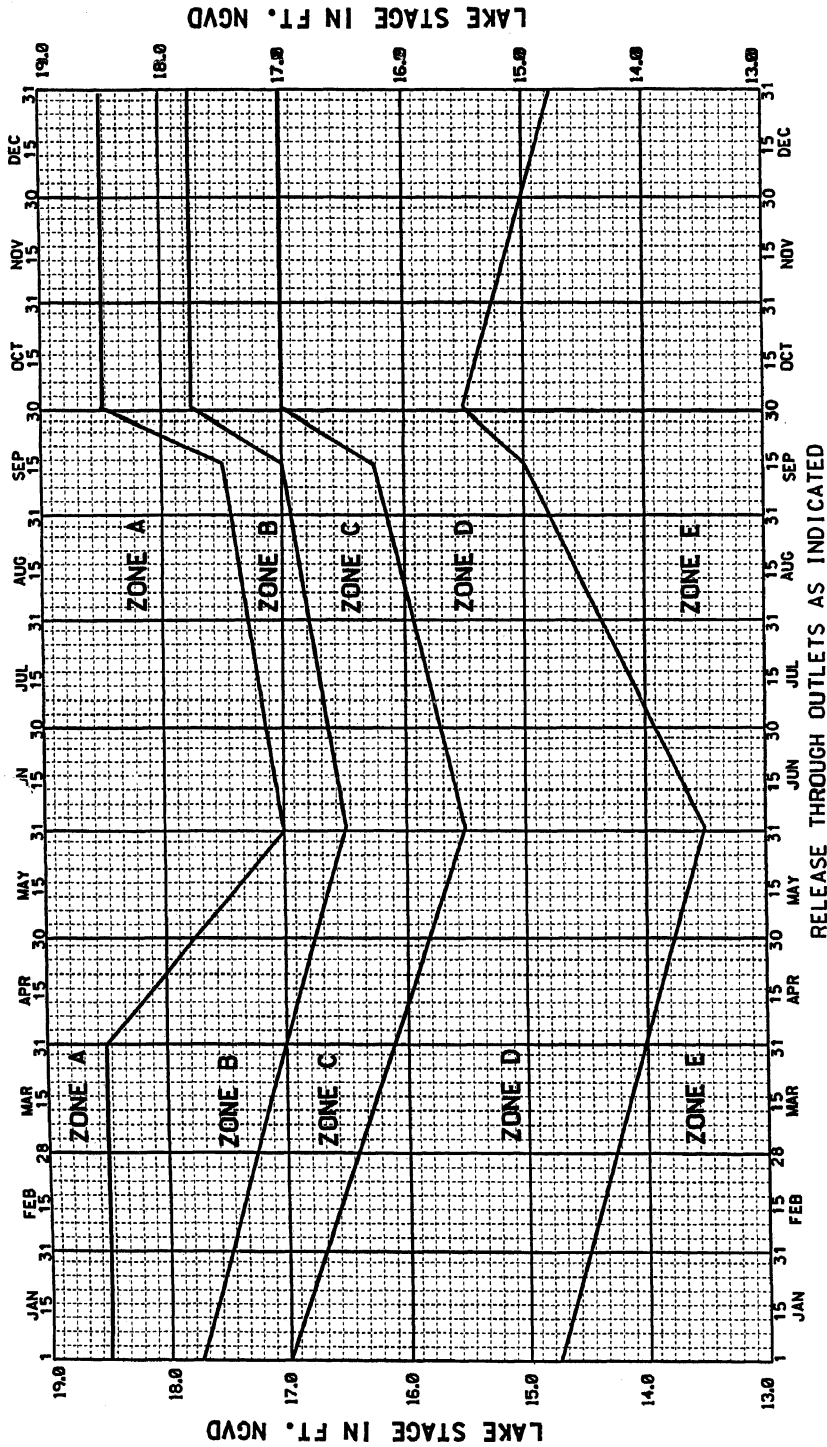


Figure 6



ZONE	AGRICULTURAL CANALS TO WCAS (1.2)	ST. LUCIE CANAL AT S-80 (1.2.4)
A	PUMP MAXIMUM PRACTICABLE	UP TO MAXIMUM CAPACITY
B (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)
C (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 3500 CFS)
D (3.5)	AS NEEDED TO MINIMIZE ADVERSE IMPACTS TO THE LITTORAL ZONE WHILE NOT ADVERSELY IMPACTING THE EVERGLADES. (SEE NOTE 5.)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 2500 CFS)
E	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE

- NOTES:
- (1) SUBJECT TO FIRST REMOVAL OF RUNOFF FROM DOWNSTREAM BASINS
 - (2) GUIDELINES FOR WET, DRY AND NORMAL CONDITIONS ARE BASED ON: 1) SELECTED CLIMATIC INDICES AND TROPICAL FORECASTS AND 2) PROJECTED INFLOW CONDITIONS. RELEASES ARE SUBJECT TO THE GUIDELINES IN THE WSE OPERATIONAL DECISION TREE, PARTS 1 AND 2.
 - (3) RELEASES THROUGH VARIOUS OUTLETS MAY BE MODIFIED TO MINIMIZE DAMAGES OR OBTAIN ADDITIONAL BENEFITS. CONSULTATION WITH EVERGLADES AND ESTUARINE BIOLOGISTS IS ENCOURAGED TO MINIMIZE ADVERSE EFFECTS TO DOWNSTREAM ECOSYSTEMS.
 - (4) PULSE RELEASES ARE MADE TO MINIMIZE ADVERSE IMPACTS TO THE ESTUARIES
 - (5) ONLY WHEN THE WCAS ARE BELOW THEIR RESPECTIVE SCHEDULES

CENTRAL AND SOUTHERN FLORIDA
INTERIM REGULATION SCHEDULE
LAKE OKEECHOBEE

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT
CORPS OF ENGINEERS, JACKSONVILLE, FLORIDA.
DATED: 5 NOVEMBER 1999

WSE (WITH CLIMATE OUTLOOK)

Figure 7

APPENDIX A - COASTAL ZONE MANAGEMENT CONSISTENCY

**FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURES**

**TEMPORARY PLANNED DEVIATION
TO ADJUST CLASSIFICATIONS OF HYDROLOGIC INDICATORS
AND FORECASTS**

1. Chapter 161, Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Response: *The proposed work project is not seaward of the mean high water line and would not affect shorelines or shoreline processes.*

2. Chapters 163(part II), 186, and 187, County, Municipal, State and Regional Planning. These chapters establish the Local Comprehensive Plans, the Strategic Regional Policy Plans, and the State Comprehensive Plan (SCP). The SCP sets goals that articulate a strategic vision of the State's future. Its purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

Response: *The proposed project has been coordinated with various Federal, State and local agencies during the planning process. The EA will be coordinated with the State to determine final compliance.*

3. Chapter 252, Disaster Preparation, Response and Mitigation. This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: *The proposed action would have no adverse effect on existing or projected future flood control, or public safety. Adequate flood control for residents of the region will be maintained. This action would be consistent with the efforts of Division of Emergency Management.*

4. Chapter 253, State Lands. This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Response: *The WSE regulation schedule has demonstrated distinct ecological benefits for the lake littoral zone and marsh and some positive benefits for the St. Lucie and Caloosahatchee Estuaries, including benthic communities, seagrasses, etc. The CLA to the WSE would allow greater benefits to Lake Okeechobee's littoral zone, while not causing significant impacts to competing needs. The estuaries would also benefit the low-level pulse releases instead of the higher regulatory releases that may be reduced if the CLA alternative is implemented.*

5. Chapters 253, 259, 260, and 375, Land Acquisition. This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: *The proposed action is completely operational, and no structural features, construction, modification of existing structures, or land acquisition is being proposed. Therefore, this action is in compliance with this chapter.*

6. Chapter 258, State Parks and Aquatic Preserves. This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: *Due to the nature of the proposed action, state parks or aquatic preserves within the immediate vicinity of the project would not be affected. The project is consistent with this chapter.*

7. Chapter 267, Historic Preservation. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: *This project has been coordinated with the State Historic Preservation Officer (SHPO). No historic properties would be affected by this action. The project is consistent with the goals of this chapter.*

8. Chapter 288, Economic Development and Tourism. This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: *Contribution from the study area to the State's tourism economy would not be compromised by this action. The action would be compatible with tourism for this area and could potentially contribute to overall growth, development and sustainability of the area through greater protection and enhancement of key natural resources, including freshwater and estuarine fisheries and wildlife. Therefore the proposed action would be consistent with the goals of this chapter.*

9. Chapters 334 and 339, Transportation. This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

Response: *No public transportation systems would be impacted by this project.*

10. Chapter 370, Saltwater Living Resources. This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

Response: *The proposed action would not adversely impact the Caloosahatchee or St. Lucie Estuaries. In fact, these estuaries may benefit through reduced high regulatory discharges from Lake Okeechobee, contributing to better estuarine water quality and salinity regimes. The estuarine biota is expected to benefit from implementation of the Class Limit Adjustment to the WSE regulation schedule. The proposed action is therefore in compliance with this chapter.*

11. Chapter 372, Living Land and Freshwater Resources. This chapter establishes the Florida Fish and Wildlife Conservation Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: *The proposed action will be coordinated with the Florida Fish and Wildlife Conservation Commission during coordination of the draft EA.*

12. Chapter 373, Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: *This project does not involve water resources as described by this chapter.*

13. Chapter 376, Pollutant Spill Prevention and Control. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: *This action does not involve transfer, storage, or transportation of pollutants.*

14. Chapter 377, Oil and Gas Exploration and Production. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: *This project does not involve the exploration, drilling or production of gas, oil or petroleum product and therefore, this chapter does not apply.*

15. Chapter 380, Environmental Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development. This chapter also deals with the Area of Critical State Concern program and the Coastal Infrastructure Policy.

Response: *The proposed action would not have any regional impact on resources in the area. Therefore, the project is consistent with the goals of this chapter.*

16. Chapters 381 (selected subsections on on-site sewage treatment and disposal systems) and 388 (Mosquito/Arthropod Control). Chapter 388 provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Response: *The project would not further the propagation of mosquitoes or other pest arthropods.*

17. Chapter 403, Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

Response: *An EA addressing this action has been prepared and will be reviewed by the appropriate resource agencies including the Florida Department of Environmental Protection. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. The project complies with the intent of this chapter.*

18. Chapter 582, Soil and Water Conservation. This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Response: *As described in greater detail in the EA, no adverse impact to existing water supply or flood control for agricultural lands within the project region are expected. The action is completely operational in nature and does not involve the disturbance of surface or sub-surface soils in any way.*

APPENDIX B – ENGINEERING REPORT

Improving the Lake Okeechobee Regulation Schedule Performance by Adjusting the Classification Limits for the Hydrologic Conditions and Outlooks

Calvin J. Neidrauer, P.E.
South Florida Water Management District

3 November 2004

1. Purpose and Scope

This report summarizes a fine-tuning adjustment to the Lake Okeechobee regulation schedule that was recommended by South Florida Water Management District (SFWMD) staff. The scope of this report is limited to describing the basis and details of the adjustment, and a summary of the simulated and expected performance compared to the unadjusted regulation schedule.

This report does not describe the details of the recent SFWMD analysis which evaluated seven alternative modifications to the regulation schedule. The simulation results of that effort and the analyses of ecological and water supply performance were presented by SFWMD staff at the Water Resources Advisory Committee workshops on Lake Okeechobee on 07June2004 and 28June2004.

2. Summary

As part of recent efforts to improve the performance of the current regulation schedule for Lake Okeechobee, Water Supply and Environment (WSE), several alternative schedule modifications have been developed and analyzed by SFWMD staff. Of the alternatives that were evaluated, the Class Limit Adjustment (CLA) alternative appears to provide the most improvement to the in-lake performance with minimal or no adverse impacts to the performance of the other lake management objectives.

The Class Limit Adjustment to the Lake Okeechobee regulation schedule, WSE, is basically a fine-tuning of some of the schedule parameters to improve the performance of the regulation schedule. The WSE schedule was the first Lake Okeechobee regulation schedule to explicitly utilize hydrologic indicators of the actual and forecast lake inflows as part of the release decision. These hydrologic indicators are quantitative estimates that are subdivided into 4-6 qualitative classifications. Through an iterative modeling process, the numeric limits of these classes were adjusted to increase the duration of time that the WSE schedule called for releases while in Zone D.

The CLA is a relatively minor improvement to the WSE regulation schedule and does not significantly change the balance of the performance of the multiple lake management objectives that was achieved by WSE (Final Environmental Impact Statement, USACE 31March2000). Rather, the CLA slightly improves the overall performance of WSE by providing increased flexibility to make Zone D releases.

The increased flexibility associated with the CLA will allow more frequent pulse releases when the Lake is in Zone D. When low to moderate releases are done over a longer time-frame and in an estuarine-sensitive manner, then there may be some avoidance of the higher, damaging discharges. The trade-off here is more low & moderate, perhaps stressful releases, but potentially less high, damaging discharges.

Simulation results have shown that CLA nearly doubles (from 17% to 34%) the amount of time that the estuary decision tree leads to Zone D releases. In addition, CLA increases the opportunity to make Zone D releases south by approximately 10-15% of the time (from 62% to 75%).

The CLA to WSE is expected to further improve the ecological performance and flood protection of the lake with minimal effects on the performance relative to estuarine high discharges, and water supply objectives. Incidental benefits to the Everglades Water Conservation Areas (WCAs), and to the estuary low-flow performance were also observed from the analyses. Details on these performance evaluations are outside the scope of this report, but were presented at the Water Resources Advisory Committee workshops on Lake Okeechobee on 07June2004 and 28June2004. The bottom line is the CLA to WSE moves the multi-objective balance closer to optimal by further improving the in-lake performance with very slight changes, if any, to the performance of the other lake management objectives.

3. Background

The current regulation schedule used for managing water levels in Lake Okeechobee is known as the Water Supply & Environment (WSE) regulation schedule (Figure 1). WSE was adopted as the official regulation schedule in July 2000 after an extensive multi-agency and multi-objective evaluation process which is described in the Final Environmental Impact Study (FEIS, USACE 31March2000). The first releases made under WSE occurred in July 2002. In the relatively short two-year period since releases began under WSE, this new schedule has demonstrated superior performance as compared with the previous regulation schedule, Run 25.

However, even with the limited track record, some weaknesses of WSE have become evident. WSE performance during the relatively wet El Nino – enhanced winter & spring of 2003 was better than Run 25, but in hindsight it could have been even better.

The schedule called for no releases to the estuaries during a long period from February to June of 2003. During this time the schedule did call for maximum practicable releases south to the WCAs, however releases were limited due to high WCA stages and limited treatment capacity in STA-1W. The Lake stage at the beginning of the 2003 wet season was about 14.6 feet, NGVD, or about in the middle of Zone D. August and September inflows pushed the Lake stage into

Zone C and for a short time into Zone B. To regulate the high Lake stage, large damaging discharges to both estuaries were required. Public concern for the health of the lake and the downstream estuaries led to commitments by executive management of the SFWMD and U.S. Army Corps of Engineers (USACE) to re-examine the WSE regulation schedule.

A specific weakness of WSE has been the rather large amount of time that the estuary decision tree ([Figure 3](#)) calls for no releases while the Lake stage is in Zone D of the regulation schedule. There have been times when the prudent action has been to make a release to the estuaries, but the decision tree did not lead to that action.

Another weakness of WSE has been the limited release volumes that have been made to the Water Conservation Areas (WCAs). The WCA decision tree ([Figure 2](#)) often points to a southward release, but high WCA stages and limited water quality treatment capacity constrained southward releases. The schedule needs to explicitly recognize the need to make pulse releases ([Table 1](#)) to the estuaries when southward releases have been constrained for extended periods.

Recent simulation modeling has shown that of the time the Lake stage is in Zone D, WSE triggers pulse releases to the estuaries only about 17% of the time. The same analysis shows releases to the WCAs are triggered about 62% of the time when the Lake stage is in Zone D. Increasing the duration of time that the decision trees call for Zone D releases was a specific objective of the SFWMD's recent efforts to improve WSE.

The USACE has initiated a multi-phase effort to improve the Lake Okeechobee regulation schedule. The current phase of their effort aims to implement a small modification to the schedule that increases the flexibility and opportunities to make releases when the Lake stage is in Zone D. The USACE's intent is to implement such a schedule modification as a temporary deviation. The USACE will prepare an Environmental Assessment (EA) document to determine if the analysis will lead to a Finding of No Significant Impact (FONSI). The next phase of the USACE's effort will likely be a more-detailed study of the Lake Okeechobee regulation schedule similar to the study that led to the current schedule (FEIS, USACE 31March2000). That phase will also examine the concurrent effects of new storage areas and other changes to the infrastructure of the C&SF water control system. The study will likely take a few years to complete as it will require a more-detailed analyses and Environmental Impact Statement (EIS).

The CLA was designed to be a small and easily-implemented change to improve the WSE regulation schedule that could potentially meet the USACE's objectives for short-term implementation via an EA and FONSI. The proposed CLA can also be considered as a starting point for further, more-significant modifications to the schedule which will require a more-detailed analysis and EIS.

4. Hydrologic Conditions and Outlooks used by WSE

The WSE schedule (Figure 1 of this report and Figure 7-1 of the Water Control Plan (WCP) for Lake Okeechobee and Everglades Agricultural Area (EAA), dated July 2000) introduced a hydrologic status parameter and a hydrologic forecast parameter as official components of the regulation schedule. The use of these parameters with decision trees (Figures 2 & 3 of this report and Figures 7-2 & 7-3 of the WCP for Lake Okeechobee and EAA) guide the Lake Okeechobee release decisions that are made by water managers.

The Tributary Hydrologic Condition (THC) is a measure of the hydrologic state of the Upper and Lower Kissimmee River Basins. The Lake Okeechobee Net Inflow Outlook (LONINO) is a forecast parameter that has been the subject of much research and investigation during the past decade in particular.

a. Tributary Hydrologic Condition (THC)

There are two measures of the tributary hydrologic condition: (1) 30-day net rainfall and (2) 14-day average S-65E flow. Table 7-4 from the Water Control Plan for Lake Okeechobee and EAA shows the official classifications and limits for the THC. Note that the wetter of the two measures represents the THC that is used with the decision trees.

b. Lake Okeechobee Net Inflow Outlook (LONINO)

The LONINO is an outlook, or forecast, of the expected net inflow to the Lake. The LONINO is defined as $NI = RF - ET + \text{inflows}$. Where NI = Net Inflow; RF & ET = rainfall and evapotranspiration, respectively, over the lake surface area; and inflows = all other inflows to the lake. There are two net inflow outlooks that are used with the WSE decision trees: (1) Seasonal LONINO and (2) Multi-Seasonal LONINO. The Seasonal LONINO estimates the net inflow to the Lake for the upcoming 6-months. The Multi-Seasonal LONINO estimates the inflows for the remainder of the current season (wet or dry season) plus the following season (dry or wet season).

After implementation of the WSE regulation schedule in July 2000, additional published research confirmed the use of several global climate indexes as predictors to Lake Okeechobee net inflows. The recent work by the National Oceanic and Atmospheric Administration (Mestas-Nunez & Enfield, March 2003) recommended the use of the El Nino Southern Oscillation (ENSO) the Atlantic Multi-Decadal Oscillation (AMO), and the Pacific Decadal Oscillation for estimating the seasonal and multi-seasonal LONINO. In 2003, the USACE accepted SFWMD staff's recommendation to use AMO/ENSO method for estimating the LONINO.

5. Classifications of the Hydrologic Conditions and Outlooks used by WSE
 Classification limits are used to define the hydrologic conditions and outlooks that are used by the decision trees for the WSE regulation schedule. The WCP for Lake Okeechobee and EAA (USACE, July 2000) contains three tables which define the class limits. These tables are shown below with both the original and adjusted class limits.

Table 7-4
Class limits for Tributary Hydrologic Conditions

Net rainfall (inches - past 4 weeks)	S-65E flows (cfs - 2 week average)	Tributary Condition Class (wetter of the two indicators)
< -3.0	< 500 200	Very Dry
-3 to -1.01	500 200- 1499 499	Dry
-1 to 1.99	1500 500-3499	Normal
2 to 3.99	3500-5999	Wet
4 to 7.99	6000-8999	Very Wet
≥ 8	≥ 9000	Extremely Wet

Table 7-7
Classification of Lake Okeechobee Net Inflow
Seasonal Outlook

Lake Net Inflow Prediction (million acre-feet)	Equivalent Depth ¹ (feet)	Lake Net Inflow Outlook Class
> 1.5 0.93	> 3.2 2.0	Very Wet
1.01 0.71 to 1.5 0.93	2.11 1.51 to 3.2 2.0	Wet
0.5 0.35 to 1.0 0.70	1.1 0.75 to 2.1 1.5	Normal
< 0.5 0.35	< 1.1 0.75	Dry

¹ Volume-depth conversion based on average lake surface area of 467000 acres.

Table 7-10
Classification of Lake Okeechobee Net Inflow
Multi-Seasonal Outlook

Lake Inflow Prediction (million acre-feet)	Equivalent Depth (feet)	Lake Net Inflow Outlook Class
> 2.0	> 4.3	Very Wet
1.51 1.18 to 2.0	3.21 2.51 to 4.3	Wet
0.5 to 1.5 1.17	1.1 to 3.2 2.5	Normal
< 0.5	< 1.1	Dry

6. Methodology Used to Determine the Class Limit Adjustments

The multi-objective performance of the regulation schedule was expected to be sensitive to changes in the class limits for hydrologic conditions and the seasonal and multi-seasonal outlooks. Sensitivity testing demonstrated this was true. The challenge was to select meaningful class limits that improved in-lake management objectives while not adversely affecting the performance relative to estuarine, Everglades, and water supply objectives.

By way of an extensive trial-and-error process using the South Florida Water Management Model (SFWMM), an adjusted set of class limits was selected which improved several measures of performance. The new class limits also significantly increase the frequency that the decision trees call for releases when the Lake stage is in Zone D. Section 7 describes in more detail the simulated and expected performance changes resulting from CLA.

Figures 4-8 compare the frequency distributions of the hydrologic conditions and outlooks with the original and adjusted class limits. The class limit adjustments generally shifted the distributions toward the wetter classes. Data for the period 1965-2000 were used to generate the frequency distributions.

a. Tributary Hydrologic Condition (THC)

1) *30-day Net Rainfall*

Figure 4 compares the frequency distribution of the 30-day net rainfall over the upper and lower Kissimmee Basins. No changes were made to the class limits for the 30-day net rainfall since the original distribution was somewhat normal and reasonable. Thus the distribution of the data did not change.

2) *14-day average S-65E flow*

Figure 5 compares the frequency distribution of the 14-day average S-65E flow. Only 2 of the 5 class limits were changed as shown on the figure and in Table 7-4 above. The adjusted limits shifted 40% of the distribution from the dry and very dry classes to the normal class.

3) *THC*

The THC is defined as the wetter of the two indicators. Figure 6 compares the THC resulting from the adjusted class limits with the THC distribution from the original limits. The adjusted limits shifted 11% of the distribution from the dry and very dry classes to the normal class. The result of this adjustment is a reduction in the duration of time that the outcome of the decision trees is no-discharge.

b. Lake Okeechobee Net Inflow Outlook (LONINO)

1) *Seasonal LONINO*

Figure 7 compares the frequency distribution of the Seasonal LONINO. All three class limits were changed as shown on the figure and in Table 7-7 above. The change most relevant to the estuary decision tree is the 12% increase in the Very Wet class frequency.

2) *Multi-Seasonal LONINO*

Figure 8 compares the frequency distribution of the Multi-Seasonal LONINO. Only one of the three class limits was changed as shown on the figure and in Table 7-10. The change shifted 21% of the distribution from the normal class to the wet class. As with the change to the Seasonal LONINO class limits, this change reduces the duration of time that the estuary decision tree outcome is no-discharge.

7. Expected Performance of the Class Limit Adjustments

Long-term performance of the CLA to WSE was evaluated based on computer model simulations. The hindsight performance of the CLA was also estimated assuming it were in operation during the past two years of WSE implementation. The results of these performance evaluations are summarized in this section after an initial discussion of multi-objective performance, trade-offs and balance.

a. Multi-objective Performance, Trade-offs and Balance

It is important to recognize that a fundamental trade-off exists among the competing Lake Okeechobee management objectives. Performance trade-offs are not at all unusual for large-scale, multi-purpose, water resource facilities. Table 2 summarizes the basic trade-offs among the multiple lake management objectives for Lake Okeechobee.

Table 2. Basic Trade-offs among competing lake management objectives

Lake Okeechobee	Tends to Benefit (improve)	Tends to Impact (worsen)
Lower stage Regulation	<ul style="list-style-type: none">• In-lake Ecology• Reduces the occurrences of high damaging Estuary flows• Estuary low flows• Flood Protection	<ul style="list-style-type: none">• Water Supply (ag, urban & environmental water supply)• Increases the occurrences of low & moderate, possibly stressful Estuary flows.
Higher stage Regulation	<ul style="list-style-type: none">• Water Supply (ag, urban & environmental water supply)• Decreases the occurrences of low & moderate, possibly stressful Estuary flows.	<ul style="list-style-type: none">• In-lake Ecology• Increases the occurrences of high damaging Estuary flows• Flood Protection

Long-term simulations demonstrated that WSE provides a balance of the multi-objective performance of the competing lake management objectives which is nearly optimal. That is, improvement in performance one objective is difficult, if not impossible, to achieve without a worsening of the performance of a competing objective. This optimal balance does not, however, provide optimal performance for any of the individual lake management objectives.

The CLA to WSE moves the balance closer to optimal by further improving the in-lake performance with inconsiderable impacts to the performance of the other lake management objectives.

b. Simulated Performance of the CLA

The performance of the CLA was simulated using the South Florida Water Management Model (SFWMM v 5.4.2) by the SFWMD's Office of Modeling. SFWMD staff designed and analyzed several alternative modifications to WSE and presented the performance evaluations at two WRAC workshops, 7 June 04 and 28 June 04. This report summarizes the performance of the CLA alternative relative to the baseline WSE schedule with the original class limits.

Note that some of the performance measure graphics include two additional simulations which represent the extremes of Zone D operation. ZD-NVR, or NVR, denotes a simulation that never makes a Zone D release when the lake stage is in Zone D. ZD-ALWYS, or ALW, denotes a simulation that always makes a Zone D release when the lake stage is in Zone D. For the estuaries, the level of the pulse release depends on how far the lake stage is into Zone D. These extreme simulations were performed to define the range of possible performance that can be attained from modifying Zone D release rules.

1) *Lake Stages and Release Volumes*

Simulation results were summarized to compare the duration of time the Lake stage was in the various zones of the regulation schedule. Table 3 shows the original class limits trigger the estuary decision tree to discharge to the estuaries only about 17% of the time. With the adjusted class limits, the decision tree triggers releases to the estuaries 34% of the time. Table 3 also shows that the adjusted class limits increase the duration of time the decision tree triggers releases to the WCAs from 62% to 75% of the time when the Lake stage is in Zone D. These additional opportunities and added flexibility to make regulatory discharges south and low-level pulse releases to the estuaries help to lower the lake stage in anticipation of wet periods.

Figure 9 shows a comparison of the stage duration curves for the CLA and baseline simulation. Also shown on the figure are the ZD_ALWYS and ZD_NVR duration curves which bracket the BASE and CLA. Note that the CLA curve falls about ½ way between the extremes and shifts the higher stages downward as much as 0.4ft. The Lake stages at the lower end of the curve are relatively unchanged relative to the base. This indicates that water supply performance may not be affected. Performance relative to water supply is described in further detail below.

Figure 10 shows the mean annual regulatory releases from the Lake. The CLA simulation increases total regulatory discharges by about 4% relative to the Base. The increased flow to the estuaries does not necessarily mean that the performance of the estuaries is worse. Some of the increased flow occurs during dry periods when the estuaries benefit from the low-level pulse releases. Estuary performance is described further below.

Table 3. Zone Statistics from 36-yr SFWMM Simulations

% of time (36-yr simulation) that LOK stage was ...	WSE BASE	ZD ALWAYS	ZD NEVER	CLA
... in Zone A	0	0	0	0
... in Zone B	1	1	2	1
... in Zone C	6	3	7	4
... in Zone D	36	22	38	33
... in Zone D3	12	3	15	9
... in Zone D2	12	5	12	11
... in Zone D1	12	14	10	13
... below ZoneD	57	74	49	62
... in Zone D & Part 1 called for maximum practicable south	62	71	62	75
... in Zone D & Part 2 called for pulses to the Estuaries	17	100	1	34

Source: SFWMMv5.4.2 Simulations (June 2004)

SFWMM simulations driven by 1965-2000 rainfall, etc. (36yrs or 13149 days)

The following sections summarize the performance of the Class Limit Adjustment to the WSE schedule for the primary resource areas that are affected by Lake Okeechobee stage regulation.

2) Lake Okeechobee

To evaluate Lake ecology, three hydrologic performance measures were used as ecological surrogates:

- a. *Number of weeks Lake stage is below 10 ft (target is zero weeks).*
As compared to the BASE, CLA improves performance by reducing the number of weeks from about 78 to 58.
- b. *Number of weeks Lake stage is above 17 ft (target is zero weeks).*
As compared to the BASE, CLA only slightly improves performance by reducing the number of weeks from about 9 to 7.
- c. *A 'stage envelope' performance measure that quantifies departure of the long-term stage from an optimal envelope that the Lake stage is desired to stay within (except drought years). The target is an average departure of less than 0.25 ft.*
As compared to the BASE, CLA reduces the average departure from about 0.95 ft to about 0.84 ft.

To evaluate flood protection, Figure 11 shows a performance measure that compares the maximum Lake stage and the number of days the stage exceeds 16.5ft, NGVD, during the beginning of the peak of the hurricane

season. As compared to the base, the CLA simulation lowers the peak stage by over 0.5ft, and reduces the number of days above 16.5ft from 17 to 3.

3) *Water Supply*

For the Lake Okeechobee Service Area (LOSA), which includes the EAA, C43 & C44 basins, and other areas supplied by Lake Okeechobee, performance is measured by the frequency and severity of water use cutbacks per the Lake Okeechobee Supply-Side Management Plan. For the Lower East Coast Service Areas (LECSAs), water supply performance measures count the simulated number of times water restrictions are triggered by low groundwater stages on the coast, or by the Lake Okeechobee Supply-Side Management Plan restrictions.

Table 4 summarizes the simulated water supply performance for the LOSA. For the 36-year simulation period the CLA slightly increases the cutback volumes and increases the percent of demands not met by 1%. Figure 12 illustrates the cutback volumes and % of demands not met for the seven years in the 36-yr simulation with the largest cutbacks.

Table 4. Lake Okeechobee Service Area Water Supply Assessment

Simulation	Total(36yr) SSM Cutbacks (1000af)	Additional SSM cutbacks over Base (1000af)	Water Yrs with SSM cutbacks >100,000af	Water Yrs with SSM cutbacks >350,000af	EAA % of Demands not Met	Other LOSA % of Demands not Met
Base	1,442		4	0	8%	6%
CLA	1,640	198	4	0	9%	7%

Table 5 summarizes the simulated water supply performance for the LECSAs. For the 36-year simulation period the CLA added one month of water restrictions compared to the Base. The additional month was due to the model assumption that phase 1 water restrictions in the LECSAs are triggered if the LOSA experiences water restrictions per the Supply-Side Management Plan. CLA did not affect local groundwater conditions or regional system water supply deliveries to the LECSAs.

Table 5. Lower East Coast Service Area Water Supply Assessment

	Months of Water Shortages in the LECSAs				
Simulation	SA-1	SA-2	SA-3	SA-4	Restrictions triggered by LOK SSM & dry season criteria
Base	35	127	32	30	29
CLA	36	128	33	31	30

SFWMD staff evaluations considered the water supply performance of the CLA to be not different from the base for both the LOSA and LECSAs.

4) *St. Lucie Estuary*

The St. Lucie Estuary (SLE) performance was evaluated by SFWMD staff by counting the number of times during the 36-yr simulation that the average monthly flows to the estuary exceeded specified flow limits. The flow limits create a flow envelope that corresponds to key estuary salinity ranges. The flow envelope is defined as:

<350cfs: below oyster envelope
 350-2000cfs: creates salinity appropriate for oysters in the middle estuary
 2000-3000cfs: creates stressful low salinity conditions in the estuary
 >3000cfs: creates damaging low salinity in the estuary

Table 6. St. Lucie Estuary Mean Monthly Flow Envelope Summary

Total inflows to SLE (basin runoff from C23,C24, C44, etc, plus LOK releases) (mean monthly cfs)	BASE (months)	CLA (months)	CLA-BASE (months)
< 350 cfs (less is better)	136	129	-7 (better)
350-2000 cfs (more is better)	231	235	+4 (better)
2000-3000 cfs (less is better)	33	40	+7 (worse)
> 3000 cfs (less is better)	32	28	-4 (better)

SFWMD estuary scientists evaluated the simulation results for the St. Lucie Estuary and concluded that the effect of CLA on the ecology of the SLE is slightly improved but probably not significantly different than the Base.

5) *Caloosahatchee Estuary*

The Caloosahatchee Estuary (CE) performance was evaluated by SFWMD staff by counting the number of times during the 36-yr simulation that the average monthly flows to the estuary exceeded specified flow limits. The flow limits create a flow envelope that corresponds to key estuary salinity ranges. The flow envelope is defined as:

<300cfs: creates damaging high salinity in upper estuary
 300-2800cfs: preferred flow range
 2800-4500cfs: creates damaging low salinity in the lower estuary
 >4500cfs: creates damaging low salinity in the San Carlos Bay

Table 7. Caloosahatchee Estuary Mean Monthly Flow Envelope Summary

Inflows to CE at S-79 (C43 basin runoff plus LOK releases) (mean monthly cfs)	BASE (months)	CLA (months)	CLA-BASE (months)
< 300 cfs (less is better)	156	149	-7 (better)
300-2800 cfs (more is better)	207	207	0
2800-4500 cfs (less is better)	37	42	+5 (worse)
> 4500 cfs (less is better)	32	34	+2 (worse)

The small increase in the number of exceedences of both the 2800cfs and 4500 cfs discharge limits is counterintuitive. Typically an increase in the low to moderate discharges leads to a decrease in high discharge events. This expectation was observed with the St. Lucie Estuary performance but not with the CE performance.

A closer look at the simulation results revealed that the small increase in high discharge events is due, in part, to the simple logic built-into the model for determining the pulse release level. When a Zone D pulse release is triggered in the simulation, the model makes Level 1 pulses when the Lake stage is in the bottom 1/3 of Zone D, Level 2 pulses when the stage is in the middle 1/3 of Zone D, and Level 3 pulses when the stage is in the upper 1/3 of Zone D. This assumption is valid for the simulation, however for the real system operation it is a guideline. The condition of the CE is a consideration when the actual release decisions are made.

The C-43 basin runoff alone contributes to 60-65% of the high discharge events at S-79. The other high discharge events occur when the sum of the basin runoff plus the Lake release exceeds the limit at S-79. Both the level of the pulse release and the timing of the pulse release from Lake Okeechobee at S-77 contribute to exceedences of the high discharge limits at S-79. Because estuary salinity conditions are a factor in deciding the level of the pulse release for the real system, the small increases from the CLA simulation are not likely to be realized in the real system.

SFWMD estuary scientists evaluated the simulation results for the Caloosahatchee Estuary and surmise that the effect of CLA on the ecology of the CE is probably not significantly different than the Base. The conclusion is that the enhanced flexibility associated with the CLA can allow for more environmentally sensitive management of discharges to the estuaries.

6) *Everglades WCAs*

Several measures of performance for the Everglades WCAs were evaluated by SFWMD staff. Hydroperiod differences relative to the Natural System Model were for the most part, not affected by CLA. However, there was a slight improvement, an extended hydroperiod, in Northern WCA-3A with CLA. CLA produced an improved habitat suitability for wading birds relative to the base case. CLA's performance for small fish was not different from the Base.

SFWMD staff evaluations of the CLA relative to the Baseline were classified into 5 broad categories (++ substantially better than the Base, + slightly better than the Base, 0 not different from the Base, - slightly worse than the Base, and – substantially worse than the Base). These performance evaluations were presented at two WRAC workshops, 7June04 and 28June04.

Performance of the CLA relative to the Base was briefly described in this section and is summarized below.

Summary of performance of the 36-yr CLA simulation relative to the Baseline:

- LOK Flood Protection: substantially better
- LOK Ecology: slightly better
- Water Supply: no change
- St.Lucie Estuary: no change
- Caloosahatchee Estuary: no change
- Everglades Hydroperiod and Ecology: slightly better

c. How much would the CLA have changed the WSE decision tree outcomes during the past 2 years?

WSE was implemented in July 2000, but the Lake stage did not rise into Zone D until two years later. A review of the weekly release decisions beginning in July 2002 allowed a hindsight analysis to be done. This analysis assumed the current method for estimating LONINO (AMO/ENSO) and the CLA were in place during the past two years. Results of this analysis are summarized below.

During the 100 weeks from 8July2002 to 31May2004, the Lake stage was in Zone D for 85 weeks (85% of the time). Table 8 shows that of the 85 weeks that the Lake stage was in Zone D, the CLA with the AMO/ENSO method would have significantly increased the number of weeks that the decision trees led to release decisions. It is important to recognize beginning in July 2003, the AMO/ENSO method for estimating LONINO replaced the use of the Croley and ENSO sub-sampling methods. Thus the improvement shown in Table 8 is due to both the AMO/ENSO method and the CLA.

Table 8. Comparison of the decision tree outcomes

Decision Tree Outcome	Actual	Estimated with CLA
Part 1 (Max practicable to WCAs)	69 weeks (81%)	83 weeks (98%)
Part 2 (up to L3 pulse to Estuaries)	25 weeks (29%)	49 weeks (58%)

During April-July of 2003, a period that included the El Nino – enhanced spring of 2003, had CLA been in operation, it would have triggered an additional 14 weeks of pulse releases to the Estuaries. During that same time CLA would have triggered an additional 4 weeks of releases to the WCAs.

These additional releases would likely have lowered the Lake stage by over one-foot which would have reduced the need for the Zone C discharges that occurred during Aug-Sep of 2003.

Conversely, during the winter and spring of 2004, a period when a formal deviation to the WSE schedule was in place, had the CLA been in operation instead, the decision trees would not have called for releases. Lake stages would likely have been about 0.8ft higher at the end of the 2004 dry season. This is important considering the late start of the 2004 wet season, the below-normal wet season rainfall as of the date of this report, and growing concerns about water supplies.

8. Recommendations

It is recommended that the Class Limit Adjustment (CLA) to WSE be further evaluated in the Environmental Assessment in an effort to improve the in-lake performance with minor, if any, impacts to the performance of the other lake management objectives. The changes proposed by the CLA are minor, easily-implemented, and tie into the information presented in the WSE FEIS (USACE 31March2000). Basically, the adjustment only requires changing six class limits on three tables in the Water Control Plan for Lake Okeechobee and the EAA (WCP). The simplicity of the modification and the demonstrated benefits with nominal adverse impacts may result in a Finding of No Significant Impact (FONSI) through an Environmental Assessment (EA) document.

As part of this short-term effort to improve WSE, the following recommendations are suggested for consideration by the USACE as potential additions to the Water Control Plan to further increase the flexibility of the WSE regulation schedule.

- a. Modify the class limits of Tables 7-4, 7-7, and 7-10 of the WCP as shown in this report.
- b. Consider adding language in the WCP to allow water managers to make different levels of Zone D pulse releases to the estuaries depending on local basin runoff characteristics (magnitude and timing).
- c. Consider adding language in the WCP recognizing that the long-term performance of WSE was based, in part, on a simulation model assumption that Level 1 pulses were made in the bottom 1/3 of Zone D, Level 2 pulses were made in the middle 1/3 of Zone D, and Level 3 pulses were made in the upper 1/3 of Zone D. This model assumption should be a guideline for real-time operation, but the real-time assessment of estuarine conditions should be an important consideration for the release decision.
- d. Consider adding language in the WCP that encourages more aggressive pulse releases to the estuaries when releases south have been limited for prolonged periods.

**Figure 1. Lake Okeechobee Regulation Schedule
Water Supply and Environment (WSE)**

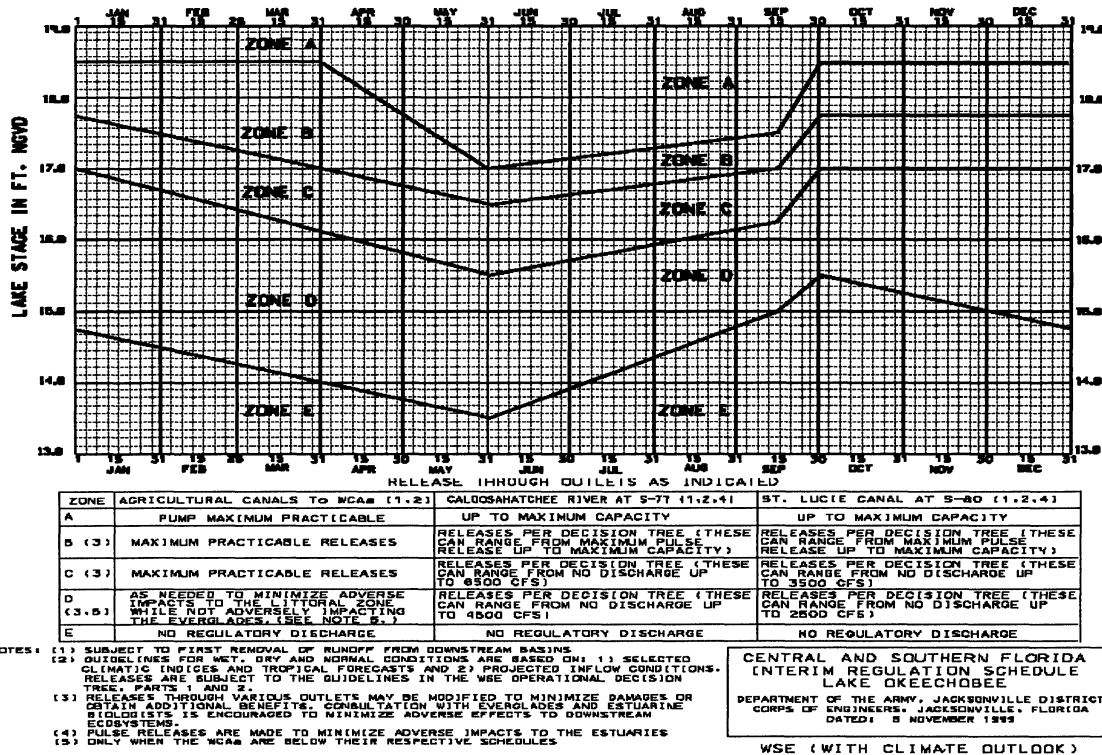


Table 1. Pulse Release Schedule

Pulse Releases - Three Levels

Table 7-11 Master Water Control Plan for Lake Okeechobee

Day of Pulse	Level I		Level II		Level III	
	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)
1	1200	1000	1500	1500	1800	2000
2	1600	2800	2000	4200	2400	5500
3	1400	3300	1800	5000	2100	6500
4	1000	2400	1200	3800	1500	5000
5	700	2000	900	3000	1000	4000
6	600	1500	700	2200	900	3000
7	400	1200	500	1500	600	2000
8	400	800	500	800	600	1000
9	0	500	400	500	400	500
10	0	500	0	500	400	500
Average Flow	730	1600	950	2300	1170	3000
Volume (Ac-Ft)	14,480	31,736	18,843	45,621	23,207	59,505
*Equivalent Depth (ft)	0.03	0.07	0.04	0.10	0.05	0.13

*Volume-Depth conversion based on average lake surface area of 467000 acres

Figure 2.
WSE Operational Guidelines Decision Tree
 Part 1: Define Lake Okeechobee Discharges to the Water Conservation Areas

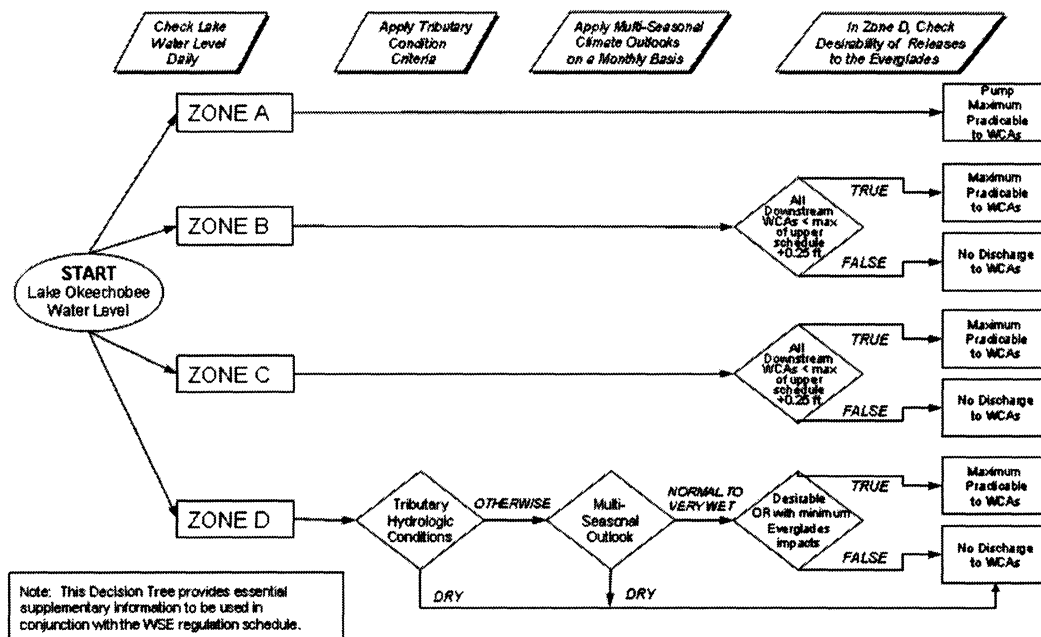


Figure 3.
WSE Operational Guidelines Decision Tree
 Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)

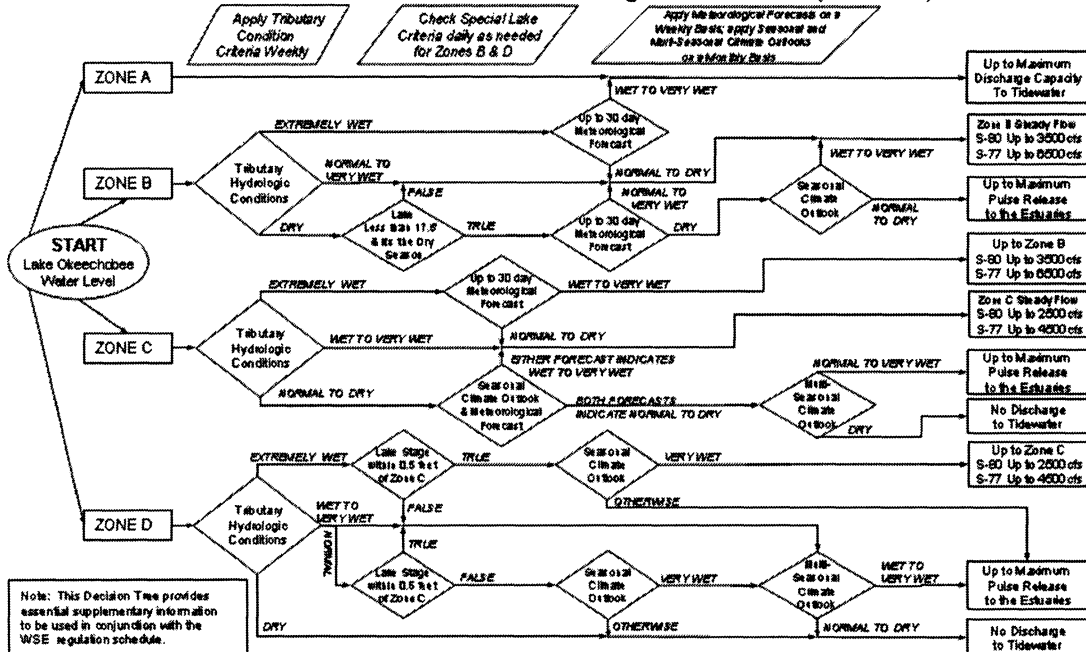


Figure 4.

Upper & Lower Kissimmee Net Rainfall Distribution

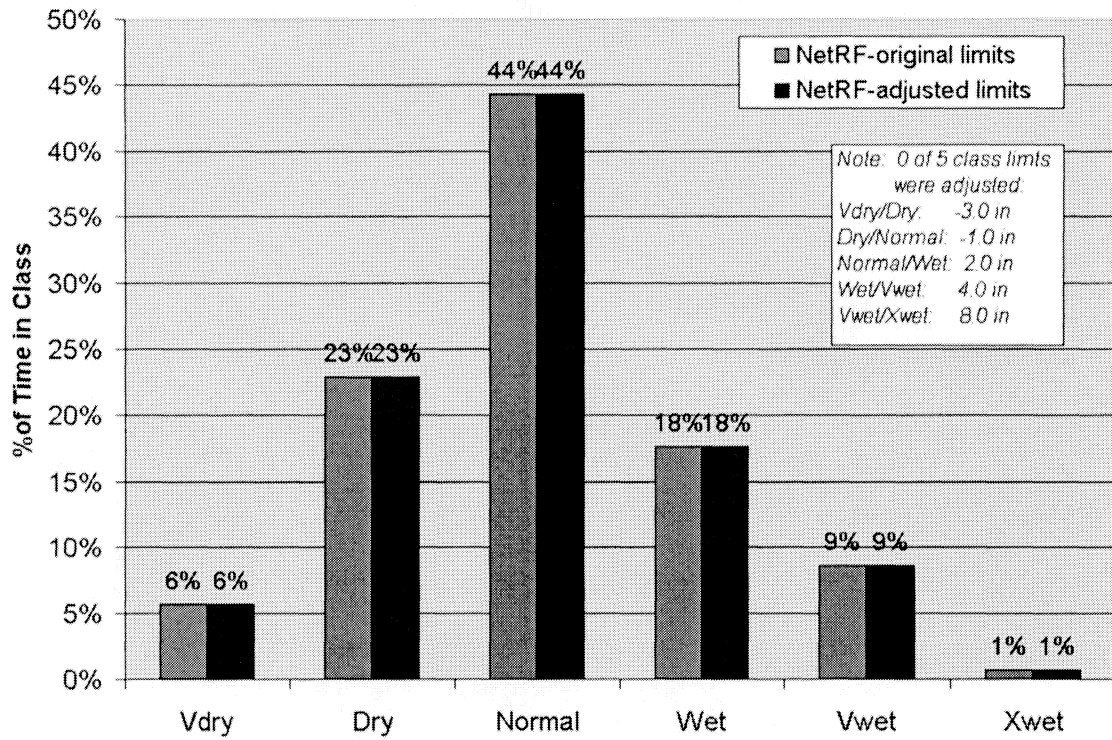


Figure 5.
S-65E Flow Distribution

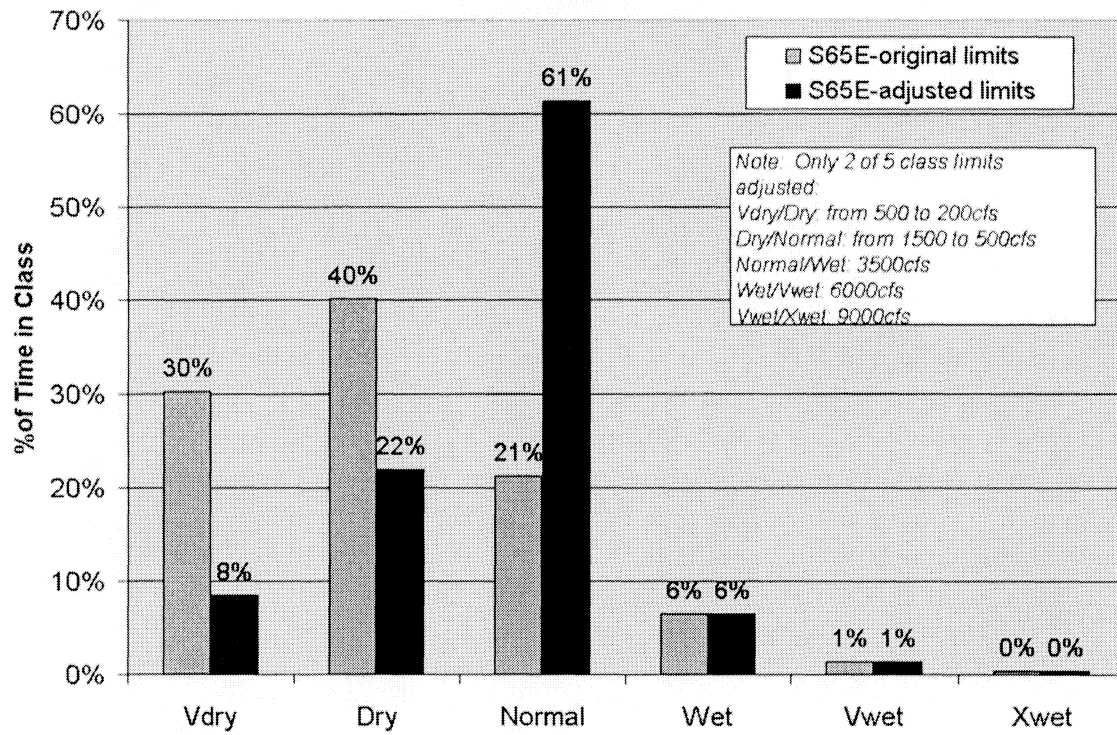


Figure 6.

Tributary Hydrologic Condition Distribution

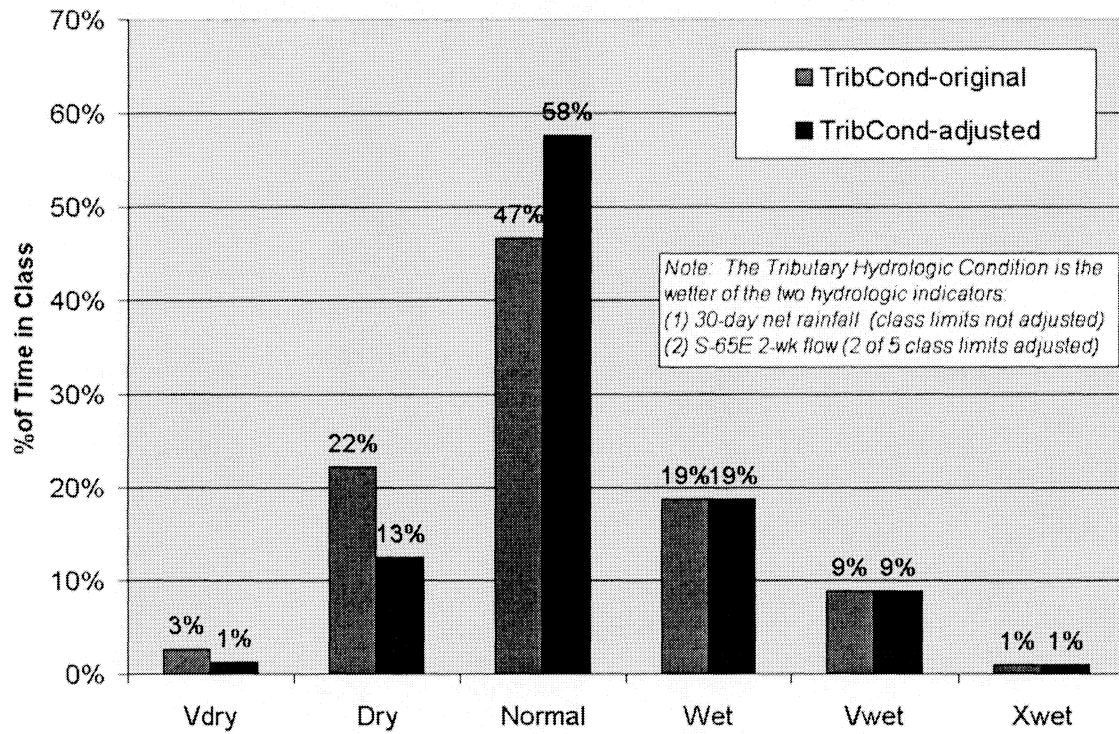


Figure 7.

Seasonal LONINO Distribution

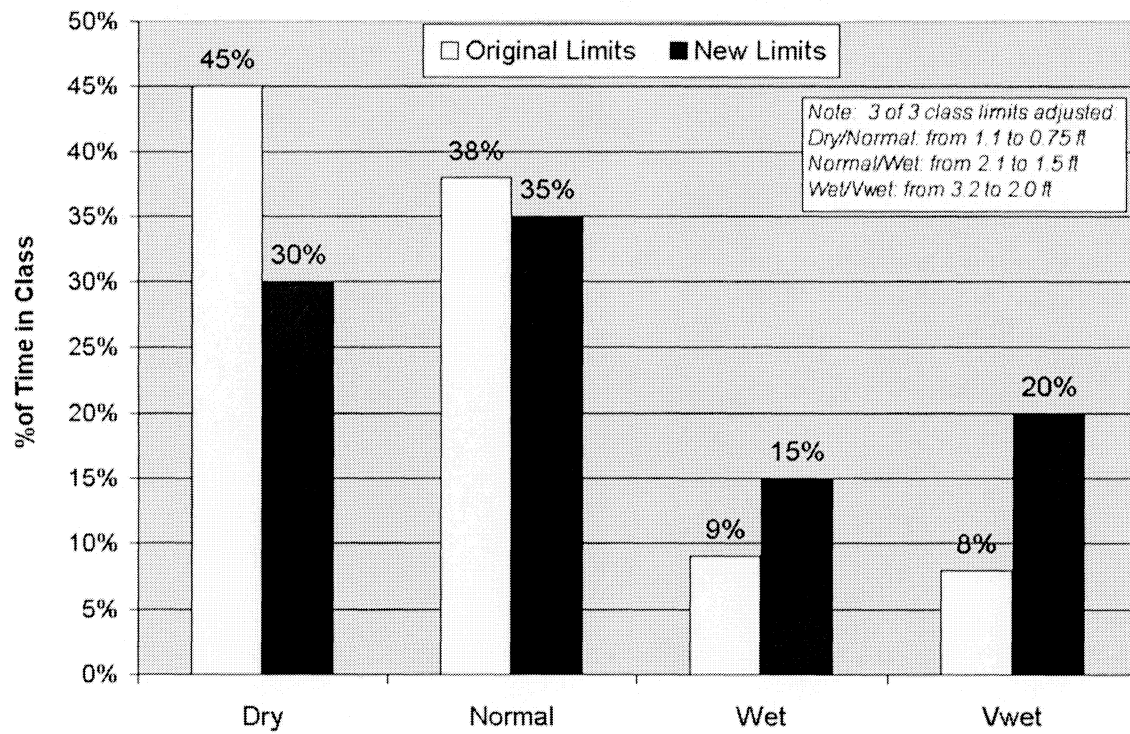


Figure 8.

Multi-Seasonal LONINO Distribution

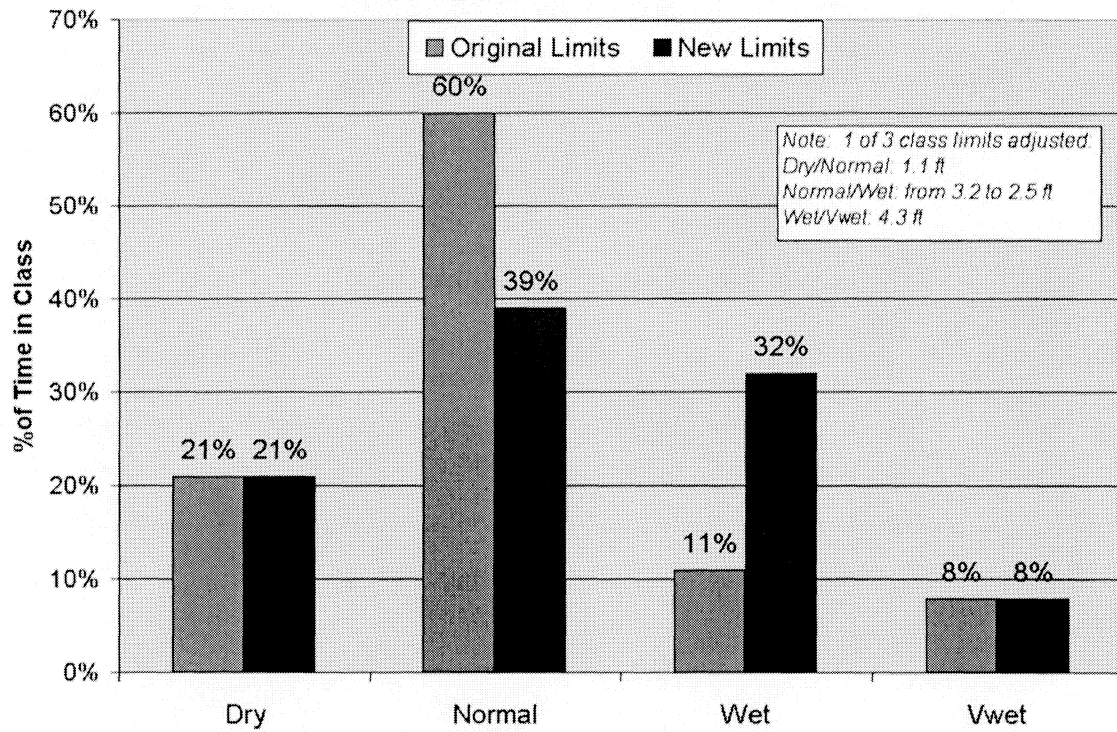
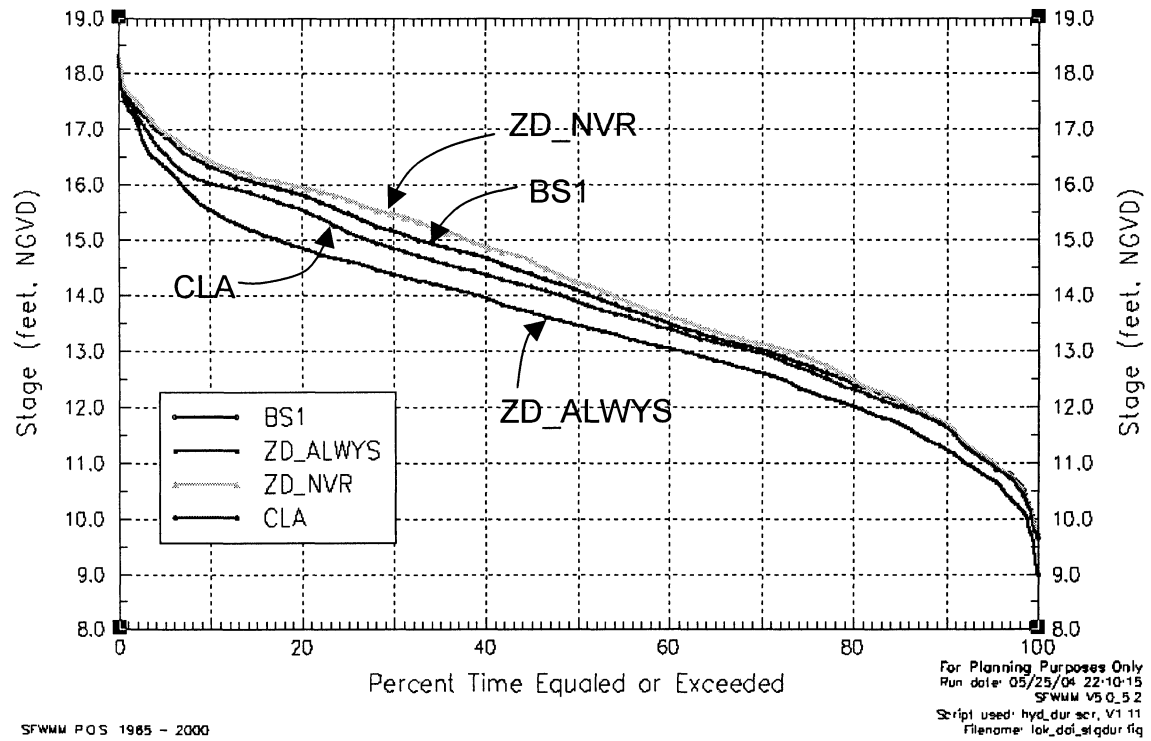


Figure 9.

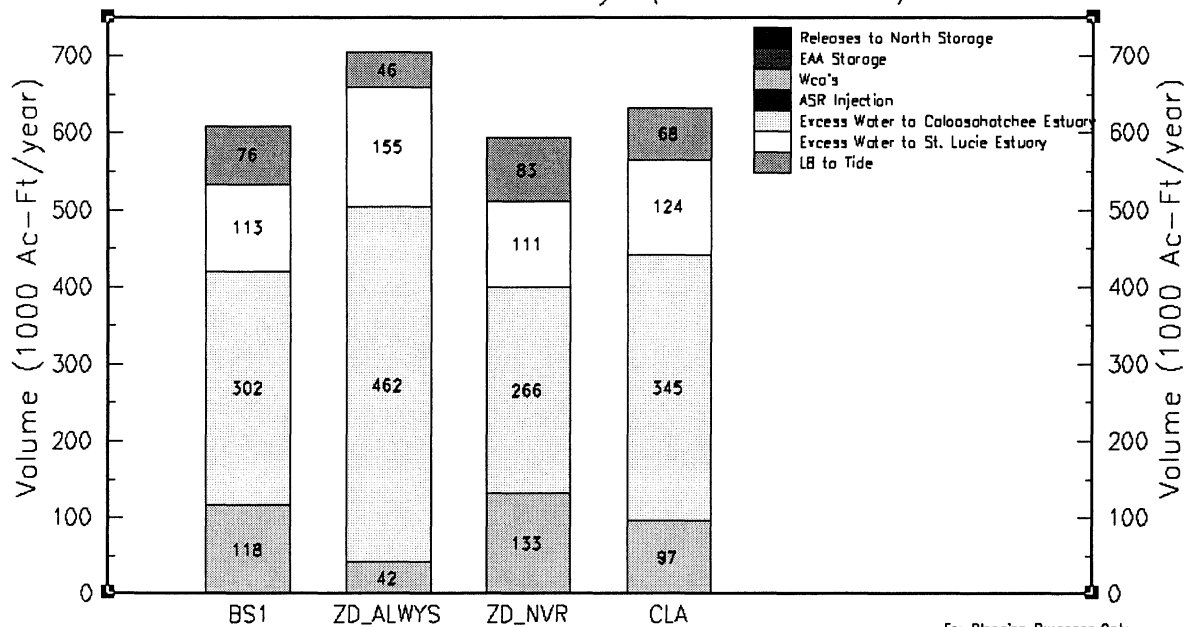
Stage Duration Curves for Lake Okeechobee



SFWM PQS 1985 - 2000

Figure 10.

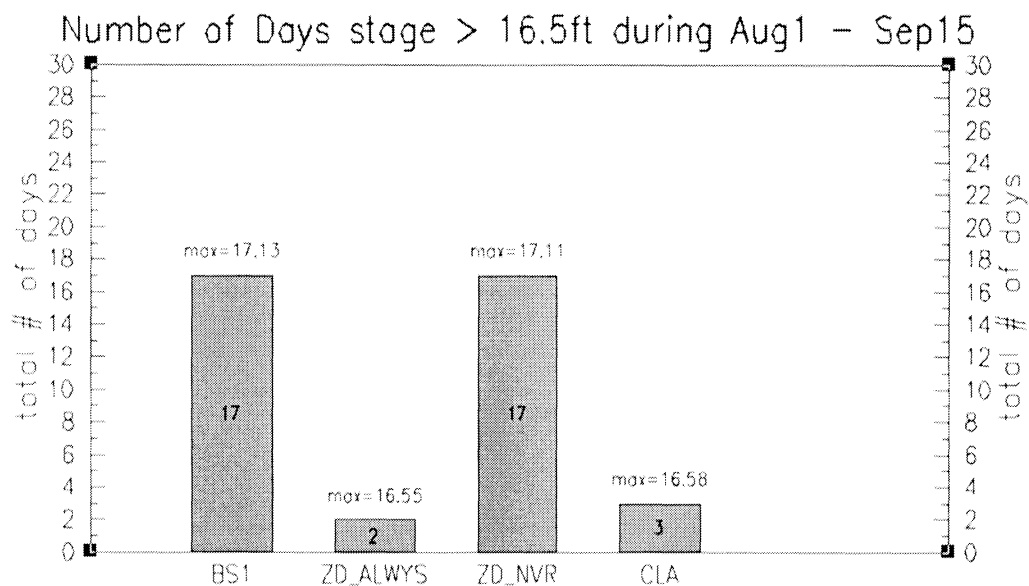
Mean Annual Flood Control Releases from
Lake Okeechobee for the 36 yr (1965 – 2000) Simulation



Note: Although regulatory (flood control) discharges are summarized here in mean annual values, they do not occur every year. Typically they occur in 2-4 consecutive years and may not occur for up to 7 consecutive years. For Planning Purposes Only
Date: 02/25/04 22:15:33
SWMM V5.0.32
Script used: lake_reg_disch.acr, V1.10
Filename: lak_regg_barfig

Figure 11.

Flood Protection Criteria for Lake Okeechobee, 1965–2000



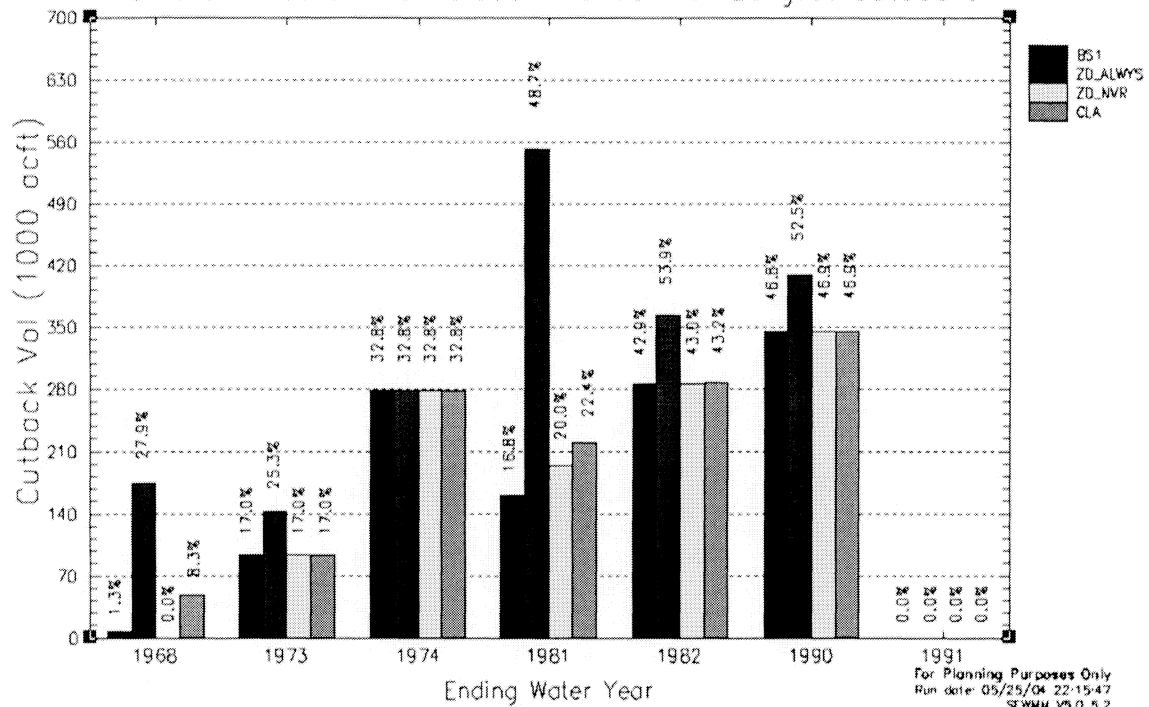
Note: The data above each bar is the maximum simulated lake stage (aug1–sep15) during the entire simulation.

*Actual criteria is 17.5 feet. The maximum stage indicates if this criteria is violated. Also of interest is how many days the stage comes within a foot of the 17.5ft criteria.

For Planning Purposes Only
Run date: 05/25/04 22:12:13
SI v10.0.5.2
Script used: lak_stage_events.scr, V1.4
Filename: lak_floodprot_bar.fig

Figure 12.

Water Year (Oct–Sep) LOSA Demand Cutback Volumes
for the 7 Years in Simulation Period with Largest Cutbacks



Note: Data Labels Reflect the % of Supplemental Demand NOT Met.

For Planning Purposes Only
Run date: 05/25/04 22:15:47
SWWU V5.0.5.2
Script used: losa_cutback yrs scr, V1.2
Filename: losa_cutback yrs_bar fig

Water Resources Advisory Committee

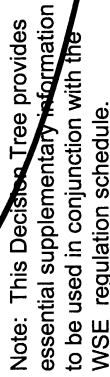
Lake Okeechobee Workshop

07 June 2004

Lake Okeechobee WSE Schedule Improvement Study WSE-SIS Regional Modeling Results

WRAC
Lake Okeechobee Water Levels Issues
Workshop
June 7, 2004

Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)



Modification of 'no discharge to tide' box in Zone D portion of the WSE decision tree

Simulation	LEGEND	Description
Base	BS1	Base run - no modifications to WSE – AMO/ENSO sub sampling for LONINO
Alternative 1	LE1	Low level releases from the Lake to the Estuaries 1
Alternative 2	LE2	Low level releases from the Lake to the Estuaries 2
Alternative 3	PDI	Low level releases from the Lake to the Estuaries are adjusted depending on the Palmer Drought Severity Index (PDSI) for the Lake tributaries.
Alternative 5	A5	Same as BS1 with deviation operations for WSE: Level I pulse releases during dry season from Nov-Mar, and ½ level I pulse release from Apr-May
Alternative 6	A6	Same as A5 (deviation) but no discharges allowed when La Nina conditions are forecast for the oncoming dry season
Alternative 7	A7	Same as BS1 with deviation operations for WSE: Level I pulse releases during dry season from Nov-Mar and wet season June-Oct, and ½ level I pulse release from Apr-May. Deviation operations are discontinued when La Nina conditions are forecast for the oncoming dry season
WSE Adjustment	CLA	Classification Limit Adjustments for the tributary hydrologic condition and the Lake Okeechobee net inflow outlook (LONINO)
Sensitivity 1	ZD_ALWAYS	Always release up to maximum pulse release to the estuaries in Zone D
Sensitivity 2	ZD_NVR	No discharge to tidewater in Zone D even if WSE calls for pulse releases

St. Lucie Estuary: SLE; Caloosahatchee Estuary: CE; Palmer Drought Severity Index: PDSI; Lake Okeechobee Net Inflow Outlook: LONINO

06/07/2004

Base (BS1)

- Same as the ICU 2000B2 Simulation, with:
 - WSE is similar (L1, L2 and L3 in Zone D)
 - Sub sampling from AMO-ENSO conditions to determine seasonal and multi seasonal LONINO
 - LOK regulatory releases through L8 and C51 to tide
 - LOSA SSM line 13.0 to 10.5
 - Phased cutbacks for LOSA
 - Adjusted for STA treatment area & South Miami-Dade operations

LE1 Simulation

- WSE is modified by having low level releases to the CE and SLE when LOK is in Zone D and WSE calls for “no discharge to tide.” The following flows (cfs) are maintained at the S-79 and S-80 structures

	J	F	M	A	M	J	J	A	S	O	N	D
S-79	800	800	500	500	500	0	0	0	0	0	500	800
S-80	200	200	200	200	200	0	0	0	0	0	200	200

LE2 Simulation

- This Alternative is the same as WSE-LE1, except that flows at S-79 continue from November to May at a reduced rate of 300 cfs when the lake falls into the upper 0.5 ft of Zone E (flows in cfs).

		J	F	M	A	M	J	J	A	S	O	N	D
S-79	D	800	800	500	500	500	0	0	0	0	0	500	800
	E	300	300	300	300	300	0	0	0	0	0	300	300
S-80	D	200	200	200	200	200	0	0	0	0	0	200	200
	E	0	0	0	0	0	0	0	0	0	0	0	0

PDI Simulation

- This alternative identifies water releases to the estuaries when the Lake stage is in Zone D and WSE falls in the “no discharge to tide” box. Releases are function of the PDSI values

PDSI		Releases (cfs)			
		November to February		March to May	
Category	Values (inches)	CE	SLE	CE	SLE
Extreme Drought	< -3.0	800 @ S-79	200 @ S-80	500 @ S-79	200 @ S-80
Moderate Drought	-3.0 to -2.0	800 @ S-79	200 @ S-80	500 @ S-79	200 @ S-80
Mild Drought	-2.0 to -1.0	800 @ S-79	200 @ S-80	500 @ S-79	200 @ S-80
Normal	-1.0 to 1.0	800 @ S-79	200 @ S-80	800 @ S-79	200 @ S-80
Wetter than Normal	1.0 to 2.0	800 @ S-77	200 @ S-308	800 @ S-79	200 @ S-80
Unusually Wet	2.0 to 3.0	Pulse 1 @ S-77	200 @ S-308	Pulse 1 @ S-79	200 @ S-308
Extremely Wet	> 3.0	Pulse 2 @ S-77	200 @ S-308	Pulse 2 @ S-79	200 @ S-308

Alternative 5 Simulation (A5)

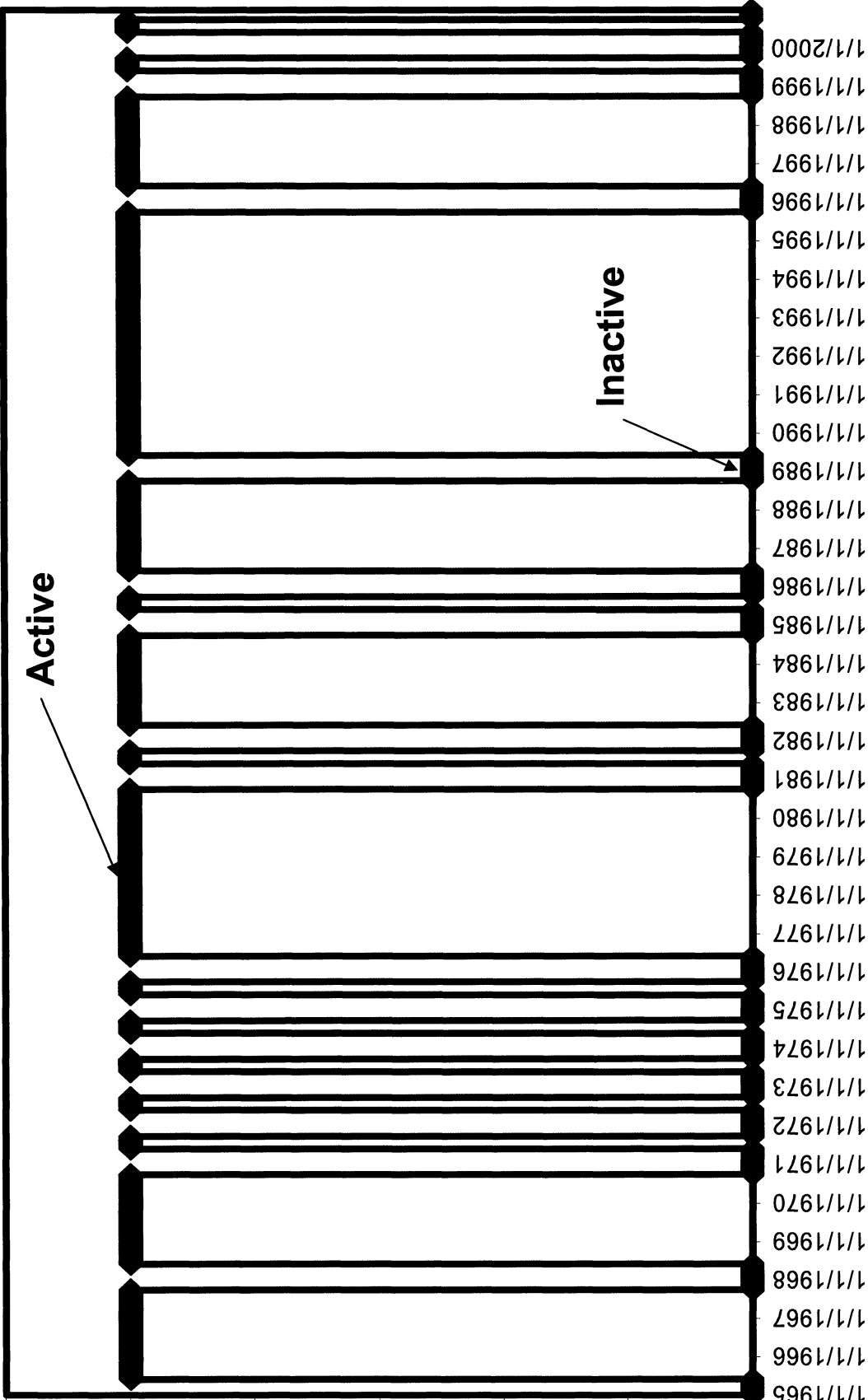
- LOK WSE Planned Deviation as implemented in 2003 – 2004
- When Lake stage is in Zone D and WSE falls in the “no discharge to tide” box, perform the following releases:

Jan-Mar	Level I to both estuaries
Apr-May	½ Level I to both estuaries
Jun-Oct	No releases
Nov-Dec	Level I to both estuaries

Alternative 6 Simulation (A6)

- Same as A5 simulation, but deviation operations are terminated when dry conditions are forecast at the beginning of the dry season (Oct. 1)
- Criteria:
 - PDSI is less than -2.5 inches on September 30th
 - ENSO (Nino 3) indicator is less than -0.6 degrees Centigrade on September 30th

Periods with WSE Deviation Active



06/07/2004

Date

10

Alternative 7 Simulation (A7)

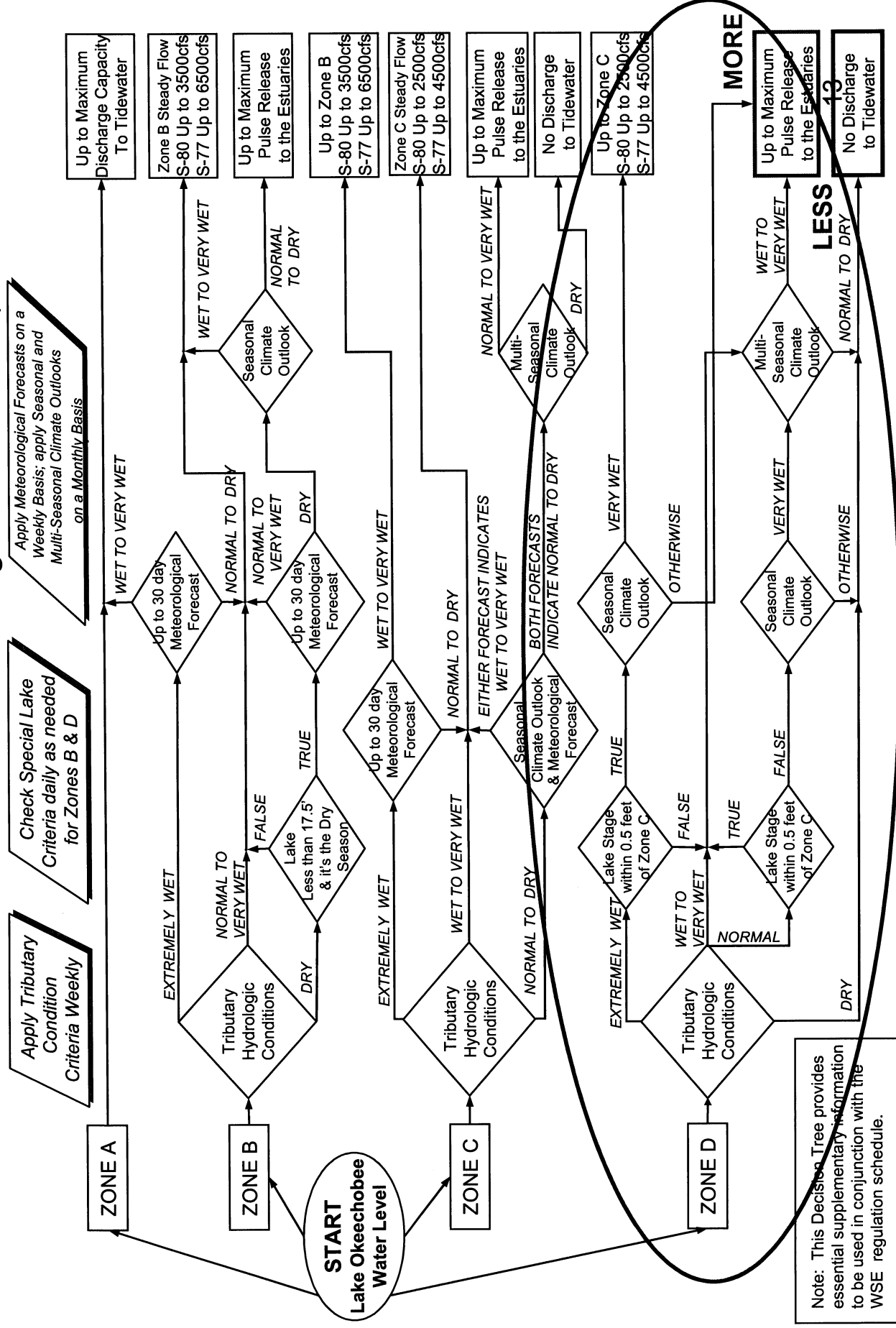
- Same as A6, but deviation operations are performed all year, with Level 1 pulse releases to both estuaries for the period June-October (wet season)

Class Limits Adjustment (CLA)

- Goal: Improve performance of WSE with minimal changes to the schedule
- Strategy: Adjust class limits for...
 - Tributary Hydrologic Conditions
 - Seasonal LONINO
 - Multi-Seasonal LONINO
- General Objective: Increase frequency of Zone D pulse releases to improve in-lake performance without significantly impacting estuary & water supply performance.

WSE Operational Guidelines Decision Tree

Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)



CLA-Changes in LONINO

LOK Equivalent Depth (feet)

- Seasonal
- Multi-seasonal

Very Wet	3.2' to 2.0'	Very Wet	4.3'
Wet		Wet	
	2.1' to 1.5'		3.2' to 2.5'
Normal		Normal	
	1.1' to 0.75'		1.1'
Dry		Dry	

CLA-Changes in Tributary Conditions

S-65E 14-day moving average flow (cfs)

<u>Extremely Wet</u>	9000 cfs
<u>Very Wet</u>	6000 cfs
<u>Wet</u>	3500 cfs
<u>Normal</u>	1500 to 500 cfs
<u>Dry</u>	500 to 200 cfs
<u>Very Dry</u>	

Establish Solution Bounds

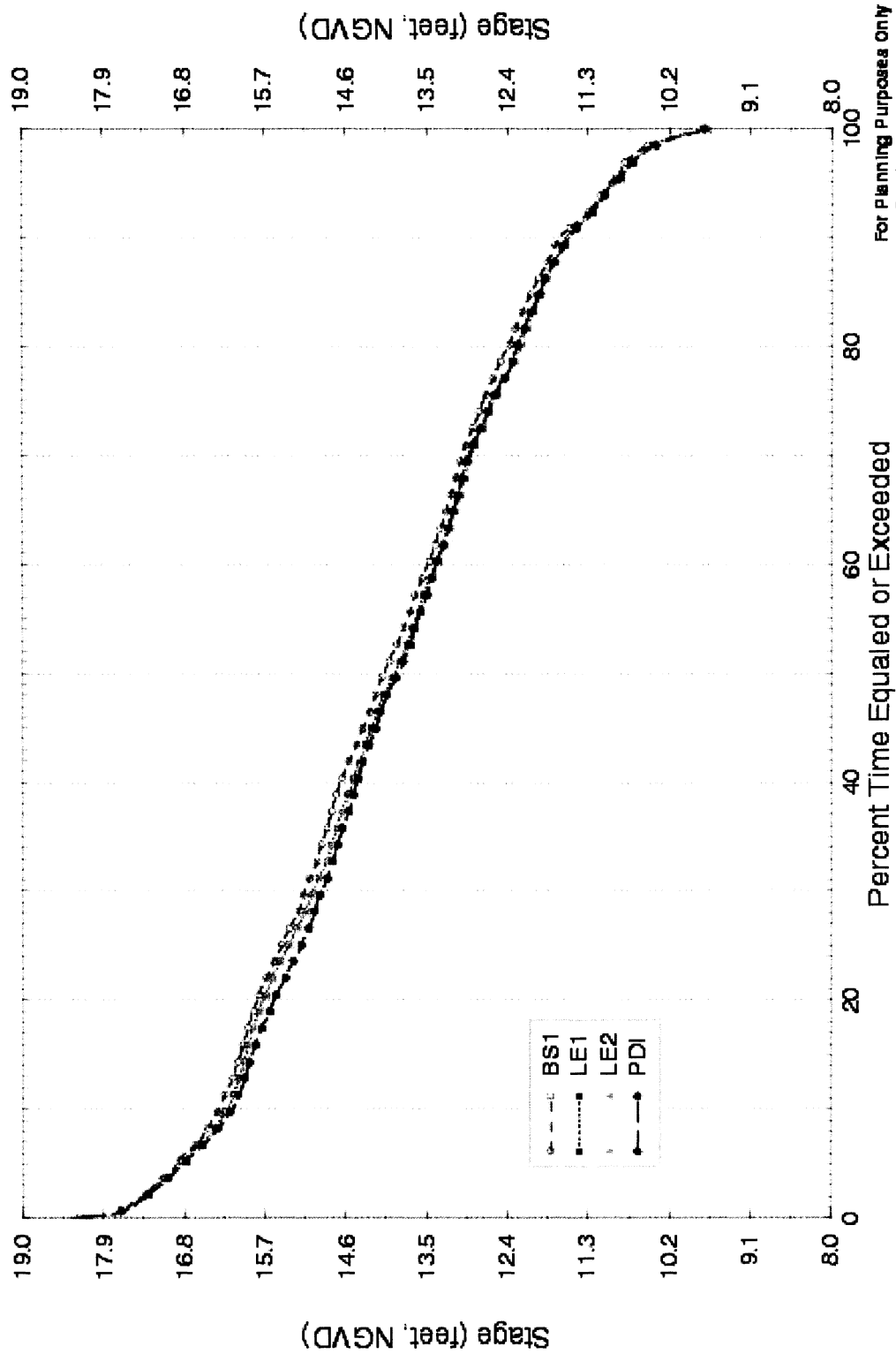
- Never do releases when Lake stage is in Zone D of WSE (ZD_NVR)
- Always release when Lake stage is in Zone D of WSE (ZD_ALWAYS)

Summary of Results

Performance summary table for the WSE-SIS model runs. Performance is compared to the Base run, and symbols indicate the following: ++ = substantially better than Base, + = slightly better than Base, 0 = not different from Base, - = slightly worse than Base, and - - = substantially worse than Base. Everglades is still under evaluation

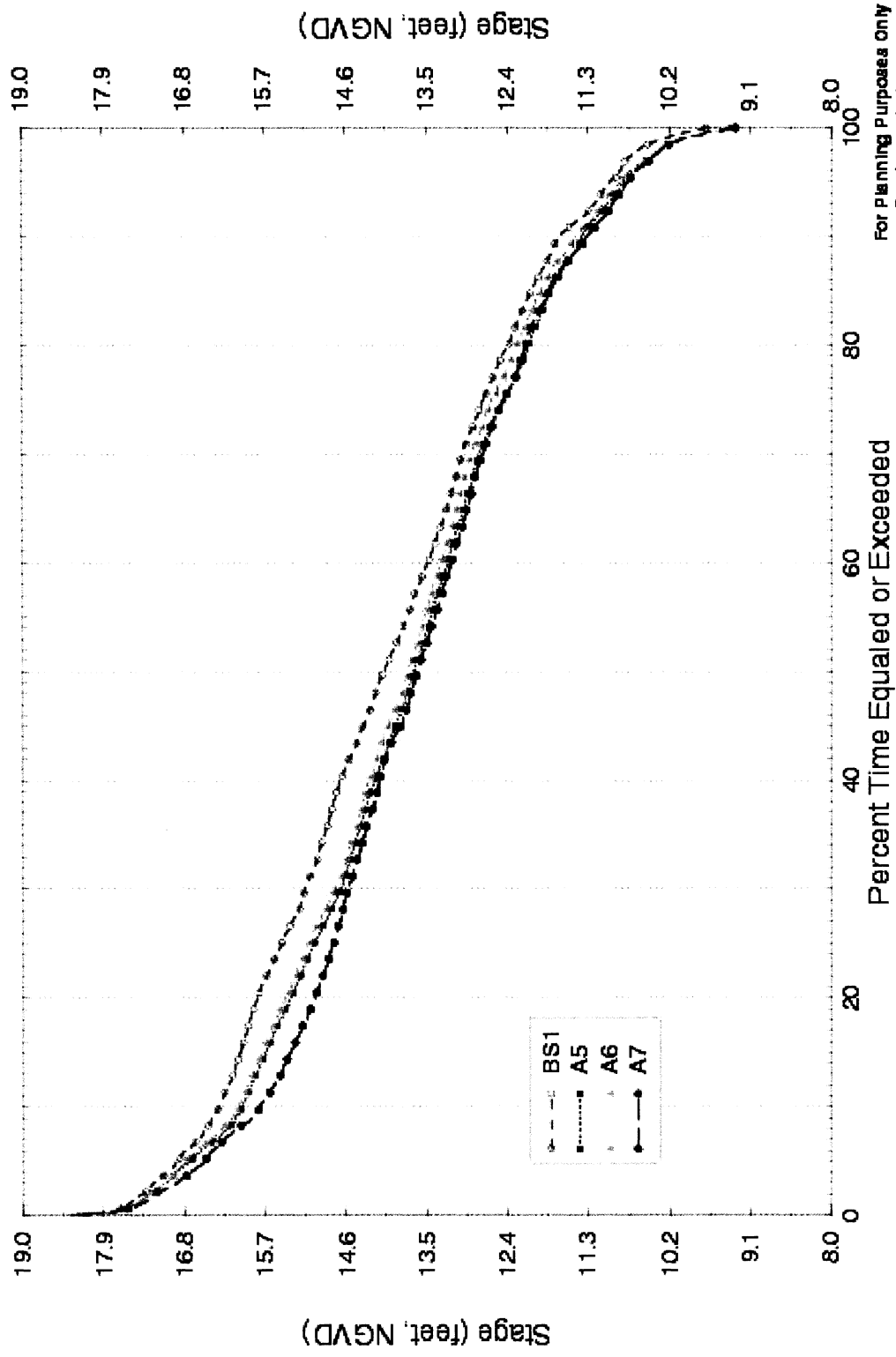
Simulation	LOK Flood	LOK Ecology	CE High Flow	CE Low Flow	SLE High Flow	SLE Low Flow	LOSA	LEC
LE1	0	0	0	++	0	0	-	0
LE2	0	0	0	++	0	0	-	0
PDI	0	0	0	++	-	+	-	0
A5	0	+	+	++	-	++	--	0
A6	0	+	0	++	-	++	--	0
A7	+	++	-	++	0	+	--	--
CLA	++	+	-	0	-	+	0	0
ZD_ALWAYS	++	++	-	++	0	++	--	--
ZD_NVR	0	--	+	0	-	-	0	0

Stage Duration Curves for Lake Okeechobee



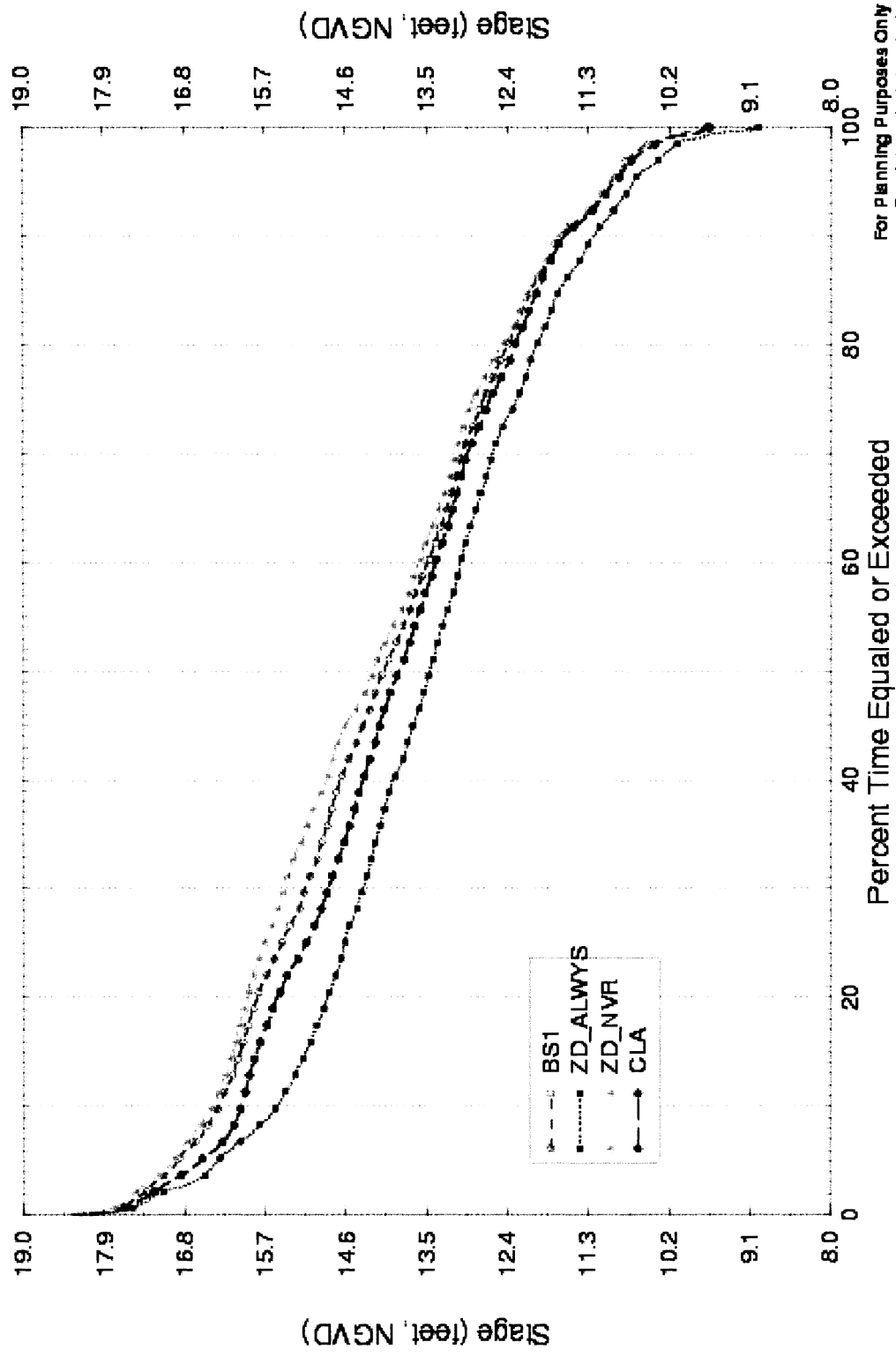
For Planning Purposes Only
Run date: 05/25/04 20:03:05
SRWMM V5.0.5.2
Script used: hyd_dur sor, V1.1.1
Filename: lak_da_sigdur.fig

Stage Duration Curves for Lake Okeechobee



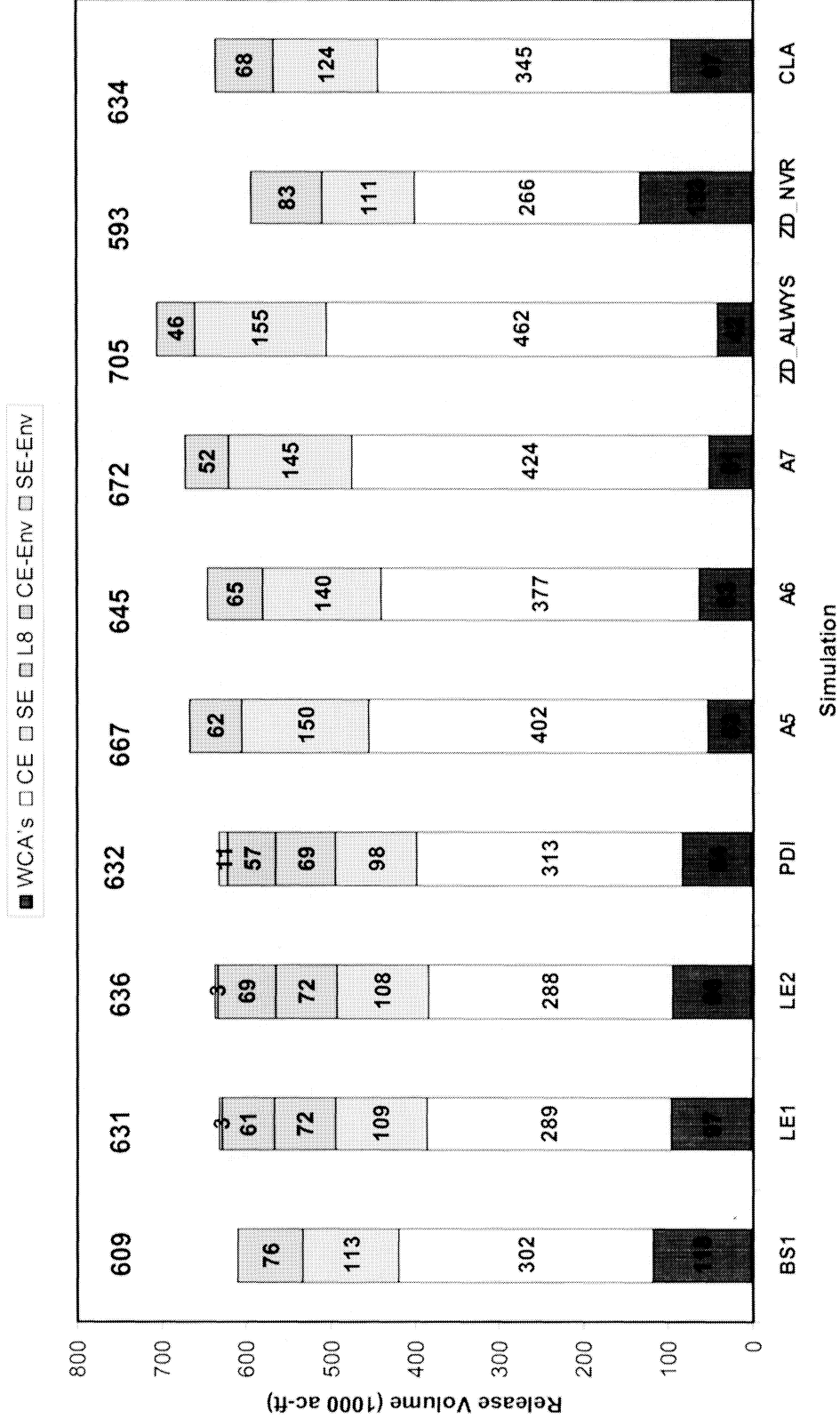
For Planning Purposes Only
Run date: 05/26/04 21:29:56
SFWM V5.0.3.2
Script used: hyd_dur_smr_V1.1.1
Filename: lak_da_sigdur.tif

Stage Duration Curves for Lake Okeechobee

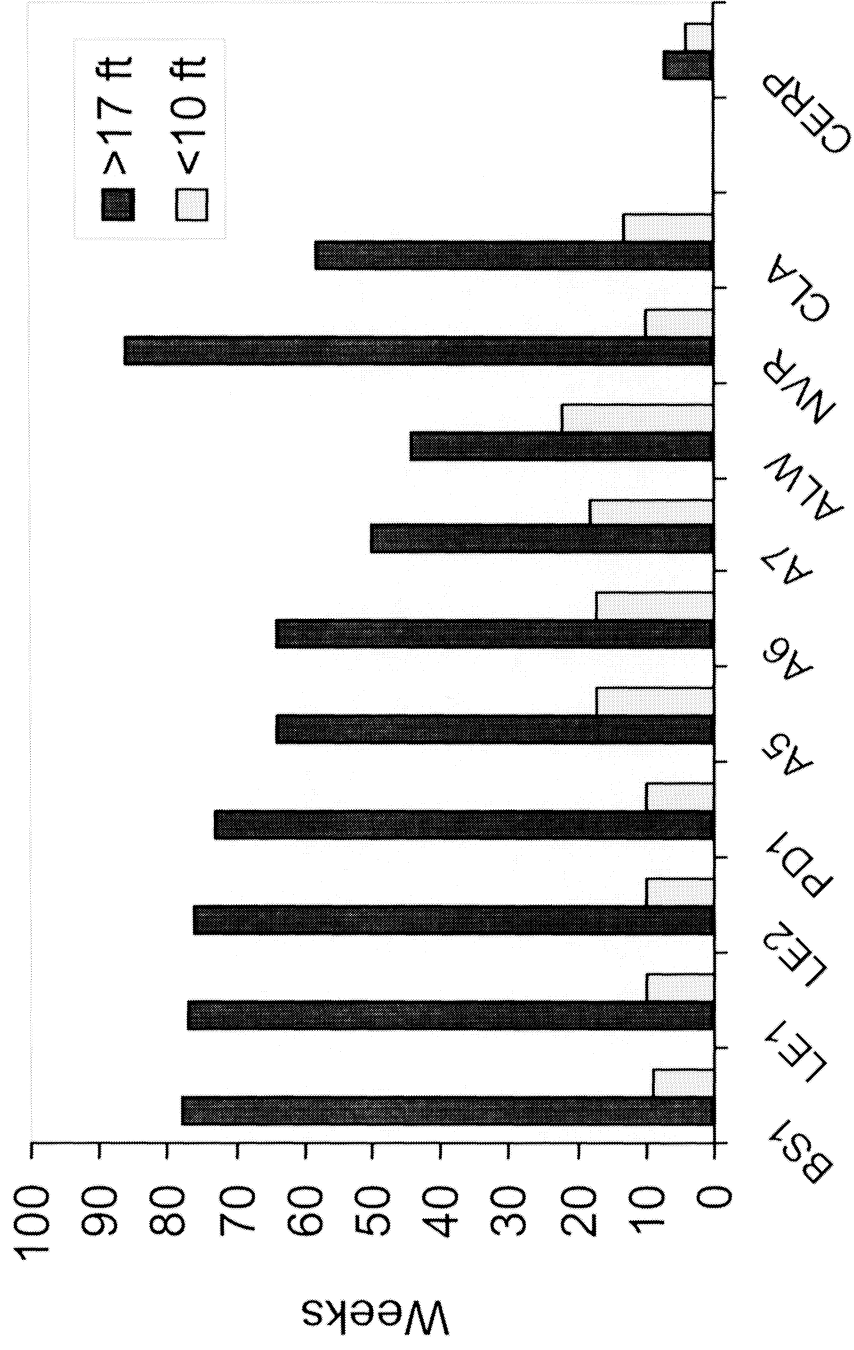


For Planning Purposes Only
Run date: 05/25/04 22:10:15
SFWM V9.0 9.2
Script used: hyd_dur_sor_V1.1.1
Filename: lak_dsl_sigdur.fg

Lake Okeechobee Mean Annual Releases Flood Control and Environmental



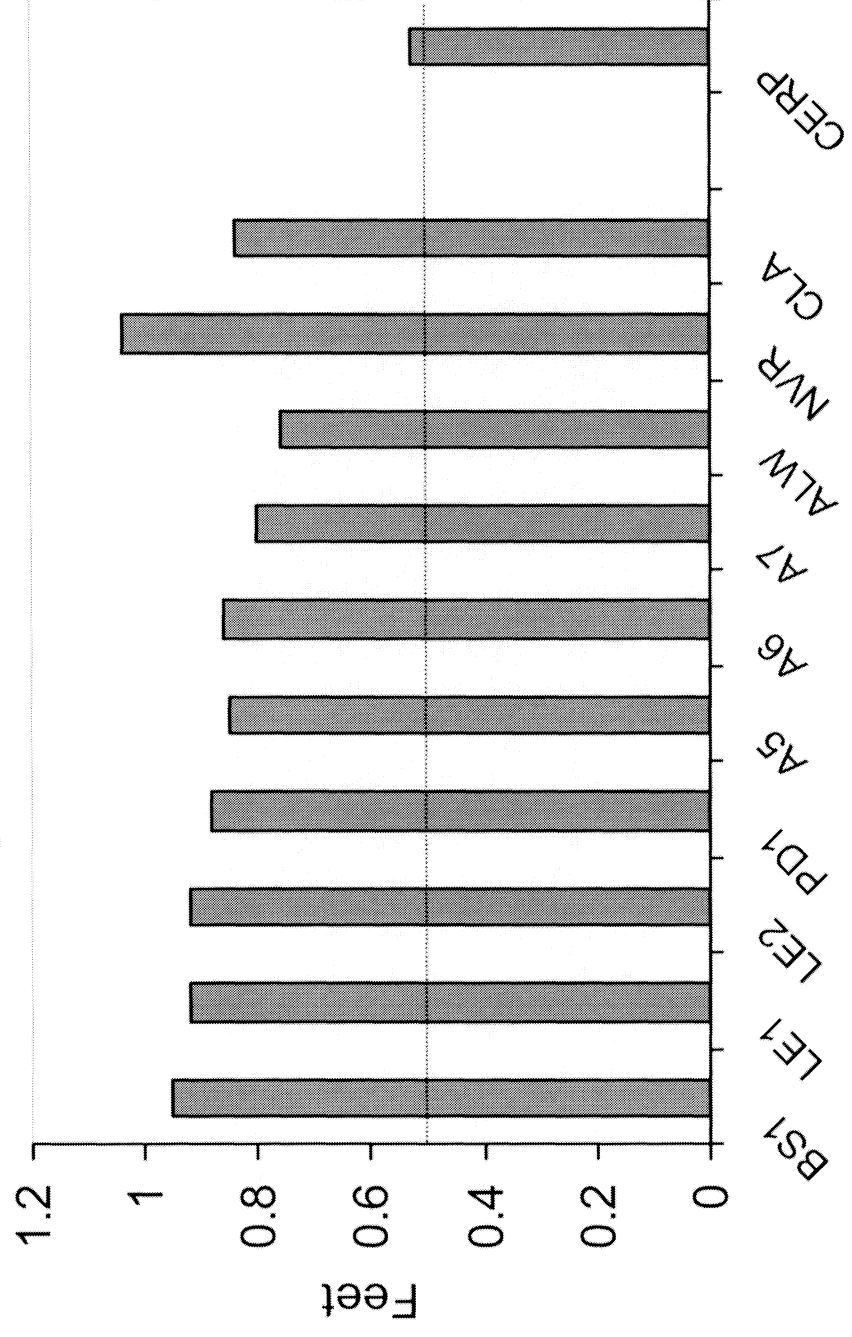
LOK Extreme High and Low Stage [Targets = 0 Weeks]



LOK Stage Envelope Performance Measure

Stage	J	F	M	A	M	J	J	A	S	O	N	D
19	3.5	4	4.5	5	6	6.5	6.5	6	5	4	3.5	3.5
18.5	3	3.5	4	4.5	5.5	6	6	5.5	4.5	3.5	3	3
18	2.5	3	3.5	4	5	5.5	5.5	5	4	3	2.5	2.5
17.5	2	2.5	3	3.5	4.5	5	5	4.5	3.5	2.5	2	2
17		2	2.5	3	4	4.5	4.5	4	3	2		
16.5	1		2	2.5	3.5	4	4	3.5	2.5		1	1
16	0.5	1		2	3	3.5	3.5	3	2	1	0.5	0.5
15.5	0	0.5	1		2.5	3	3	2.5		0.5	0	0
15	0	0	0.5	1	2	2.5	2.5	2	1	0	0	0
14.5	0	0	0	0.5		2	2		0.5	0	0	0
14	0.5	0	0	0	1			1	0	0	0.5	0.5
13.5	1	0.5	0	0	0.5	1	1	0.5	0	0	1	1
13		1	0.5	0	0	0.5	0.5	0	0	0.5		
12.5	2		1	0.5	0	0	0	0	0	1	2	2
12	2.5	2		1	0	0	0	0	0.5		2.5	2.5
11.5	3	2.5	2		0.5	0.5	0.5	0.5	1	2	3	3
11	3.5	3	2.5	2	1	1	1	1		2.5	3.5	3.5
10.5	4	3.5	3	2.5					2	3	4	4
10	4.5	4	3.5	3	2	2	2	2	2.5	3.5	4.5	4.5
9.5	5	4.5	4	3.5	2.5	2.5	2.5	2.5	3	4	5	5
9	5.5	5	4.5	4	3	3	3	3	3.5	4.5	5.5	5.5
8.5	6	5.5	5	4.5	3.5	3.5	3.5	3.5	4	5	6	6
8	5.6	6	5.5	5	4	4	4	4	4.5	5.5	5.6	5.6
7.5	7	6.5	6	5.5	4.5	4.5	4.5	4.5	5	6	7	7

LOK Stage Envelope [Target < 0.5 ft]



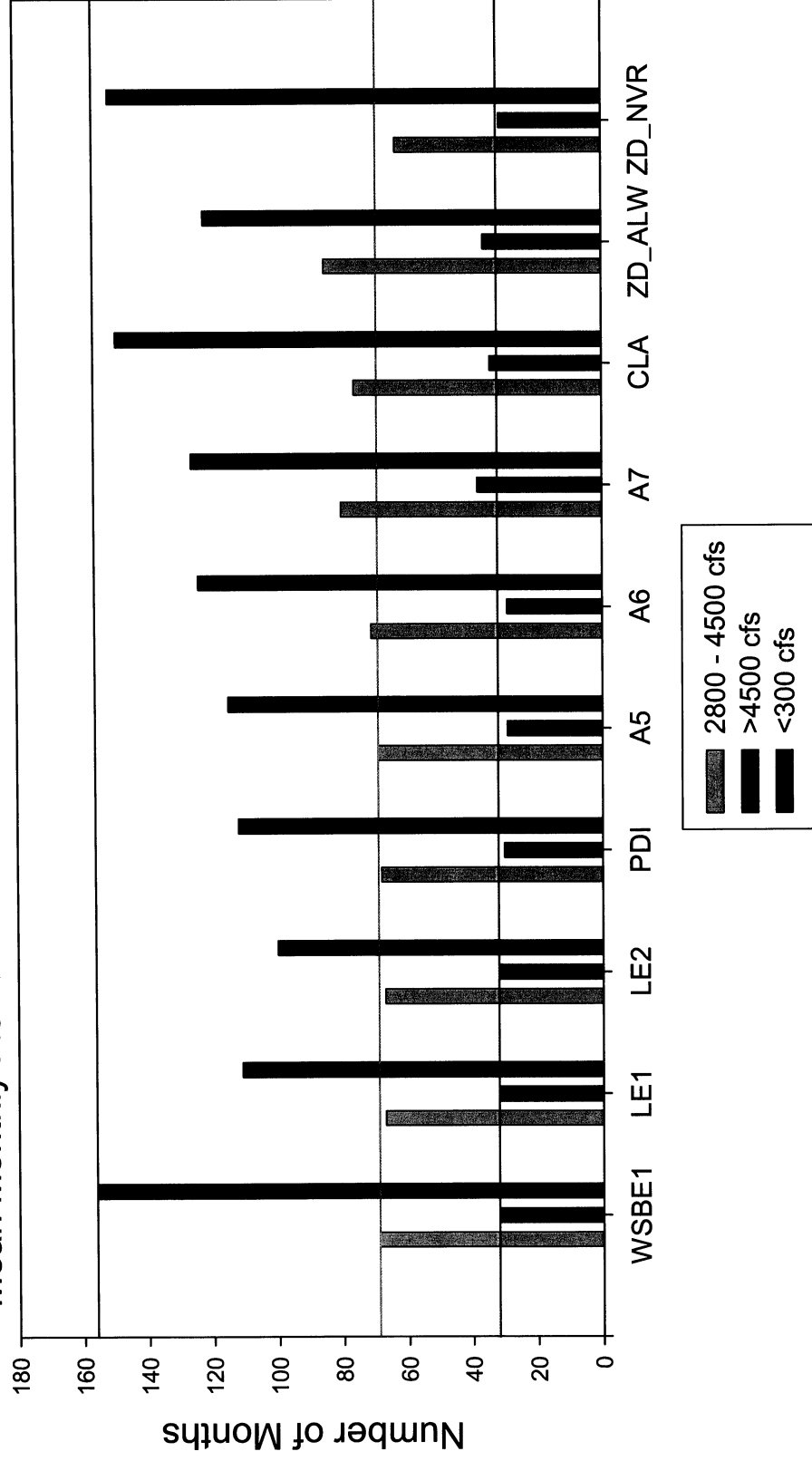
Flow Envelope for the Caloosahatchee at S-79

- < 300 cfs: high damaging salinity in upper estuary
- 2800 – 4500 cfs: low damaging salinity in the seaward portion of the estuary
- >4500 cfs: low damaging salinity in San Carlos Bay

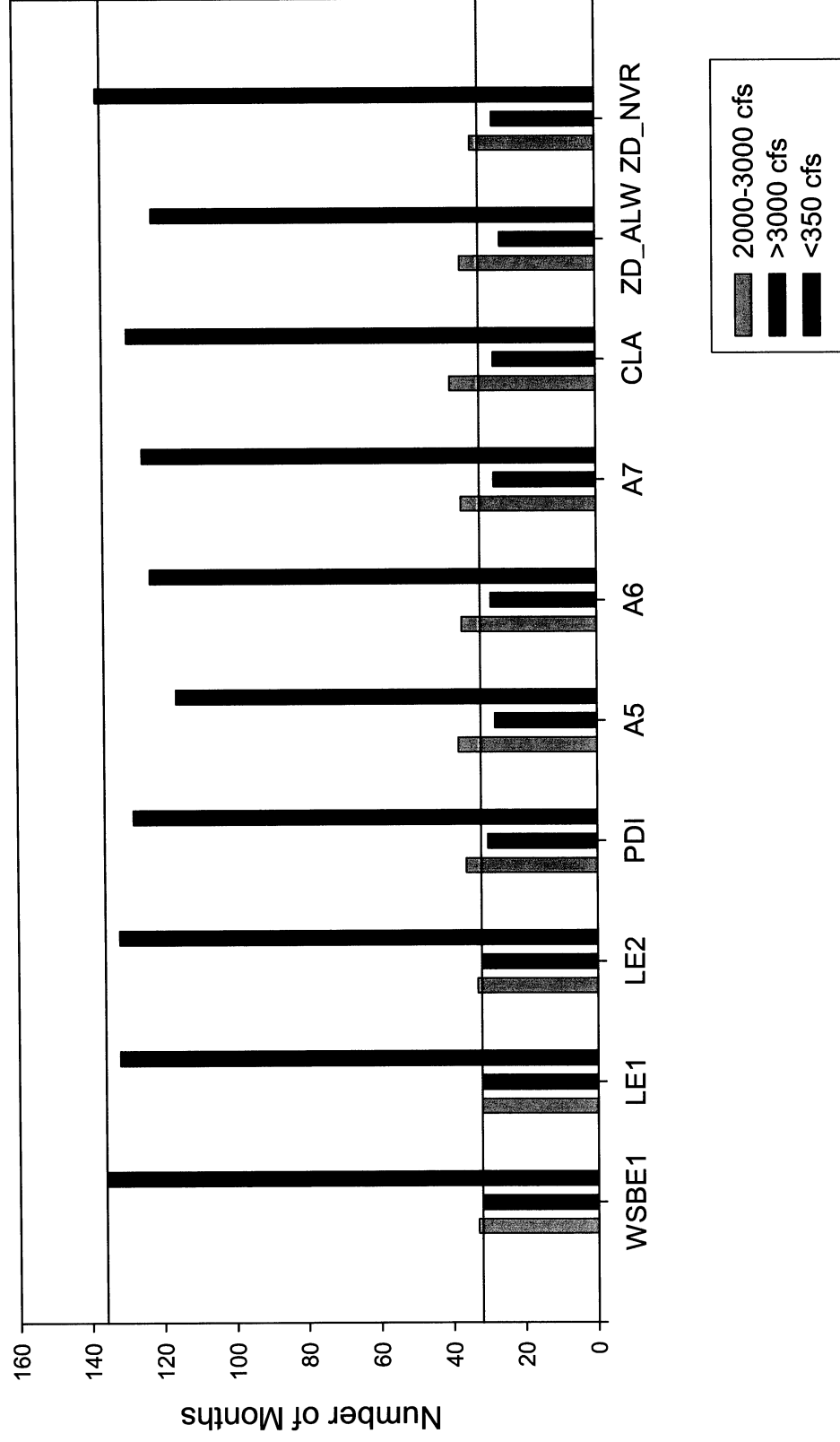
Flow Envelope for the St. Lucie Estuary

- <350 cfs: salinity too high in estuary
- 2000 – 3000 cfs: creates stressful low salinity conditions in estuary
- >3000 cfs: low damaging salinity in estuary

Mean Monthly Flows at S-79 on the Caloosahatchee River



Mean Monthly inflow to the St. Lucie Estuary
(C44, C23, C24, Northfork, Southfork, LOK regulatory releases)



Lower East Coast Water Supply Assessment – WSE Runs						
	Months of Water Shortages in Lower East Coast Service Areas					
Simulation	SA-1	SA-2	SA-3	SA-4	Lake O and Dry Season Criteria	
BS1	35	127	32	30	29	
LE1	36	128	34	31	30	
LE2	36	128	34	31	30	
PDI	36	128	34	31	30	
A5	36	128	34	31	30	
A6	35	127	32	30	29	
A7	43	131	41	38	37	
CLA	36	128	33	31	30	
ZD_ALWAYS	47	131	45	42	41	
ZD_NVR	34	126	31	29	28	

Lower East Coast Water Supply Assessment – Alternatives Compared to WSE-B1						
		Additional Months of Water Shortages Compared to BS1				
Simulation	Assessment	SA-1	SA-2	SA-3	SA-4	Lake O and Dry Season Criteria
LE1	0	1	1	2	1	1
LE2	0	1	1	2	1	1
PDI	0	1	1	2	1	1
A5	0	1	1	2	1	1
A6	0	0	0	0	0	0
A7	--	8	4	9	8	8
CLA	0	1	1	1	1	1
ZD_ALWAYS	--	12	4	13	12	12
ZD_NVR	0	-1	-1	-1	-1	-1

Lake Okeechobee Service Area Water Supply Assessment – Alternatives Compared to BS1							
		Water Shortage Measures and Comparisons to BS1					
Simulation	Assessment	SSM Cutbacks (acre ft.)	Additional SSM Cutbacks compared to BS1 (acre ft.)	Water Years with SSM Cutbacks >100,000 acre feet	Water Years with SSM Cutbacks >350,000 acre feet	EAA Percent of Demands not Met (%)	Other Lake Okeechobee Service Area Percent of Demands not Met (%)
BS1		1,441,780		4	0	8	6
LE1	-	1,774,570	332,790	5	1	10	8
LE2	-	1,810,750	368,970	7	1	10	8
PDI	-	1,673,340	231,560	5	1	9	7
A5	--	2,214,780	773,000	7	2	12	8
A6	--	2,034,440	592,660	6	2	11	8
A7	--	2,286,280	844,500	7	2	12	9
CLA	0	1,640,170	198,390	4	0	9	7
ZD_ALWAYS	--	2,689,980	1,248,200	8	3	14	10
ZD_NVR	0	1,401,960	-39,820	4	0	8	5

Questions ?

Water Resources Advisory Committee

Lake Okeechobee Workshop

28 June 2004

Lake Okeechobee Regulation Schedule (WSE) Improvements

Classification Limit Adjustments for the Tributary
Hydrologic Condition and the Lake Okeechobee
Net Inflow Outlook (LONINO)

(WRAC) Issues Workshop on Lake Okeechobee

June 28, 2004

Calvin Neidrauer, P.E.
Water Control Operations
South Florida Water Management District

Topics

- WSE Basics
- Class Limit Adjustment (CLA)

Lake Okeechobee Regulation Schedule

WSE - What it is & What it's not

- What WSE is...
 - New & improved regulation schedule (implemented July 2000)
 - WSE = Water Supply and Environment
 - Improves multi-objective performance and better balances competing lake management objectives
- What WSE is not...
 - Not a schedule for water supply deliveries
 - Still a flood release schedule (push vs pull)
 - Not a panacea for the lake health

WSE Regulation Schedule

Major Features

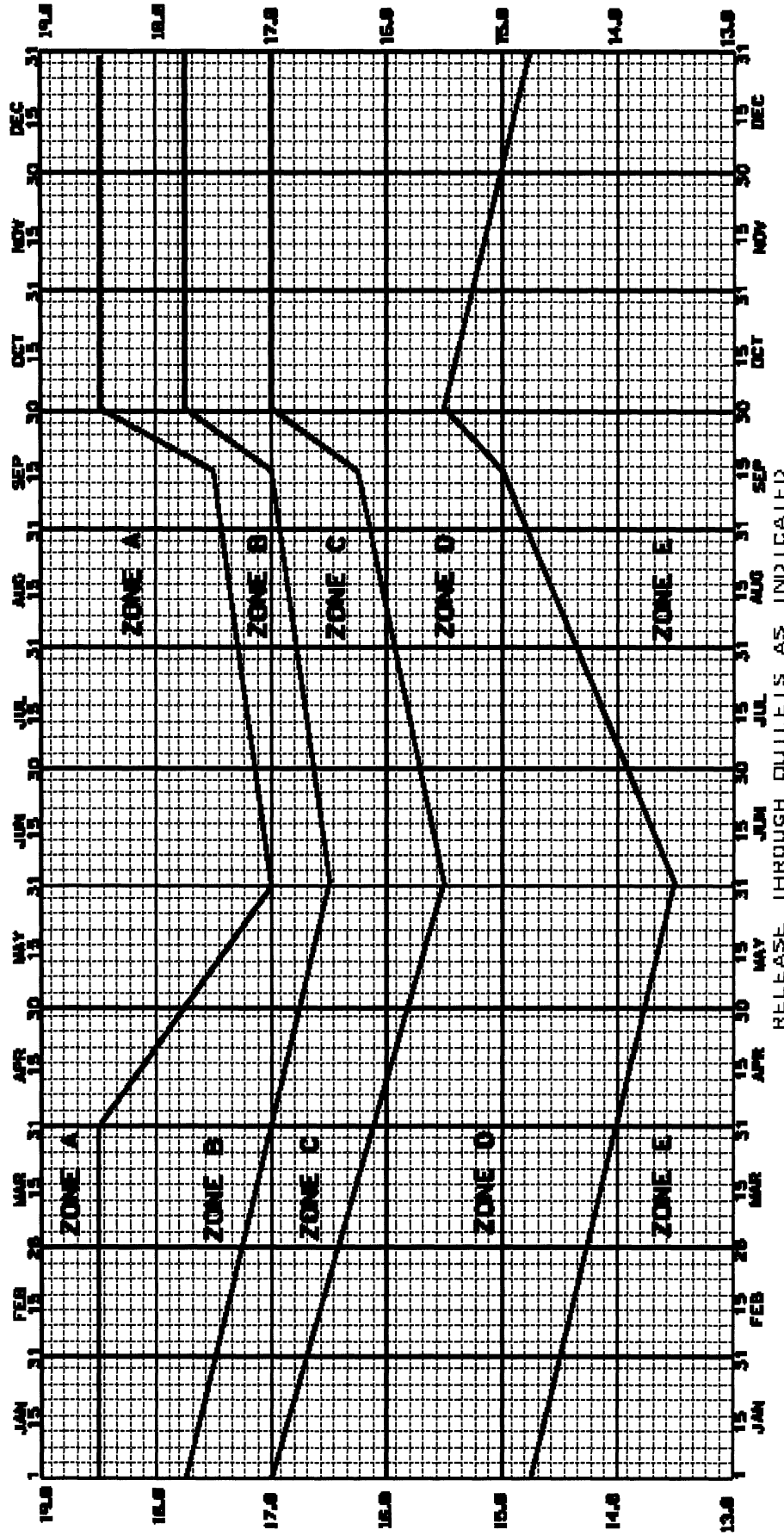
- Initiates discharges at lower stages under special conditions to WCAs & estuaries
- Pulse releases made to estuaries for extended periods when very large inflows are expected
- Discharges not required when drier conditions are expected - benefits water supply
- Provides more flexibility in release decisions
 - Uses climate & hydrologic forecasting
 - Decision trees are part of the schedule
 - Outflow rules provide ranges vs fixed rates

WSE Regulation Schedule

Operational Elements

- Lake Okeechobee Water Level Criteria
- Tributary Hydrologic Conditions
 - 30 Day Net Rainfall
 - 2-week average Kissimmee River inflow
- Lake Okeechobee Net Inflow Outlook (LONINO)
 - Seasonal LONINO (6 months)
 - Multi-Seasonal LONINO (up to 12 months)
 - LONINO developed by SFWMD's Office of Modeling

LAKE STAGE IN FT., NGVD



RELEASE THROUGH QUILEIS AS INDICATED

ZONE	AGRICULTURAL CANALS TO WCAS (1.2)	CALOOSAHATCHEE RIVER AT S-77 (1.2.4)	ST. LUCIE CANAL AT S-80 (1.2.4)
A	PUMP MAXIMUM PRACTICABLE	UP TO MAXIMUM CAPACITY	UP TO MAXIMUM CAPACITY
B (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)
C (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 6500 CFS)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 3500 CFS)
D (3.5)	AS NEEDED TO MINIMIZE ADVERSE IMPACTS TO THE LITTORAL ZONE WHILE NOT ADVERSELY IMPACTING THE EVERGLADES. (SEE NOTE 5.)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 4500 CFS)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 2500 CFS)
E	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE

- NOTES: (1) SUBJECT TO FIRST REMOVAL OF RUNOFF FROM DOWNSTREAM BASINS
 (2) GUIDELINES FOR WET, DRY AND NORMAL CONDITIONS ARE BASED ON: 1) SELECTED CLIMATIC INDICES AND TROPICAL FORECASTS AND 2) PROJECTED INFLOW CONDITIONS. RELEASES ARE SUBJECT TO THE GUIDELINES IN THE WSE OPERATIONAL DECISION TREE, PARTS 1 AND 2.
 (3) RELEASES THROUGH VARIOUS OUTLETS MAY BE MODIFIED TO MINIMIZE DAMAGES OR OBTAIN ADDITIONAL BENEFITS. CONSULTATION WITH EVERGLADES AND ESTUARINE BIOLOGISTS IS ENCOURAGED TO MINIMIZE ADVERSE EFFECTS TO DOWNSTREAM ECOSYSTEMS.
 (4) PULSE RELEASES ARE MADE TO MINIMIZE ADVERSE IMPACTS TO THE ESTUARIES
 (5) ONLY WHEN THE WCAS ARE BELOW THEIR RESPECTIVE SCHEDULES

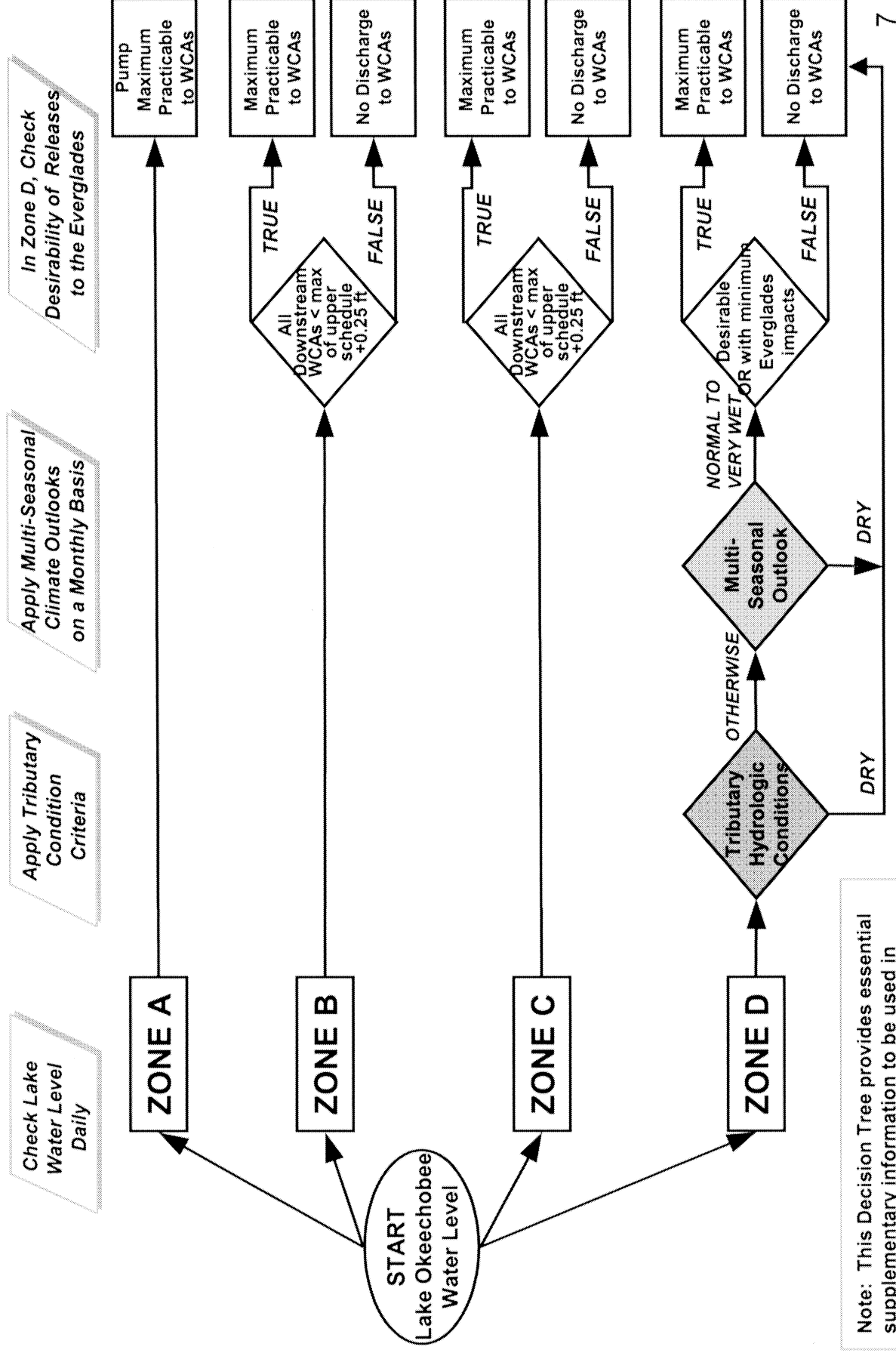
CENTRAL AND SOUTHERN FLORIDA
 INTERIM REGULATION SCHEDULE
 LAKE OKEECHOBEE

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT
 CORPS OF ENGINEERS, JACKSONVILLE, FLORIDA
 DATED: 5 NOVEMBER 1999

WSE (WITH CLIMATE OUTLOOK)

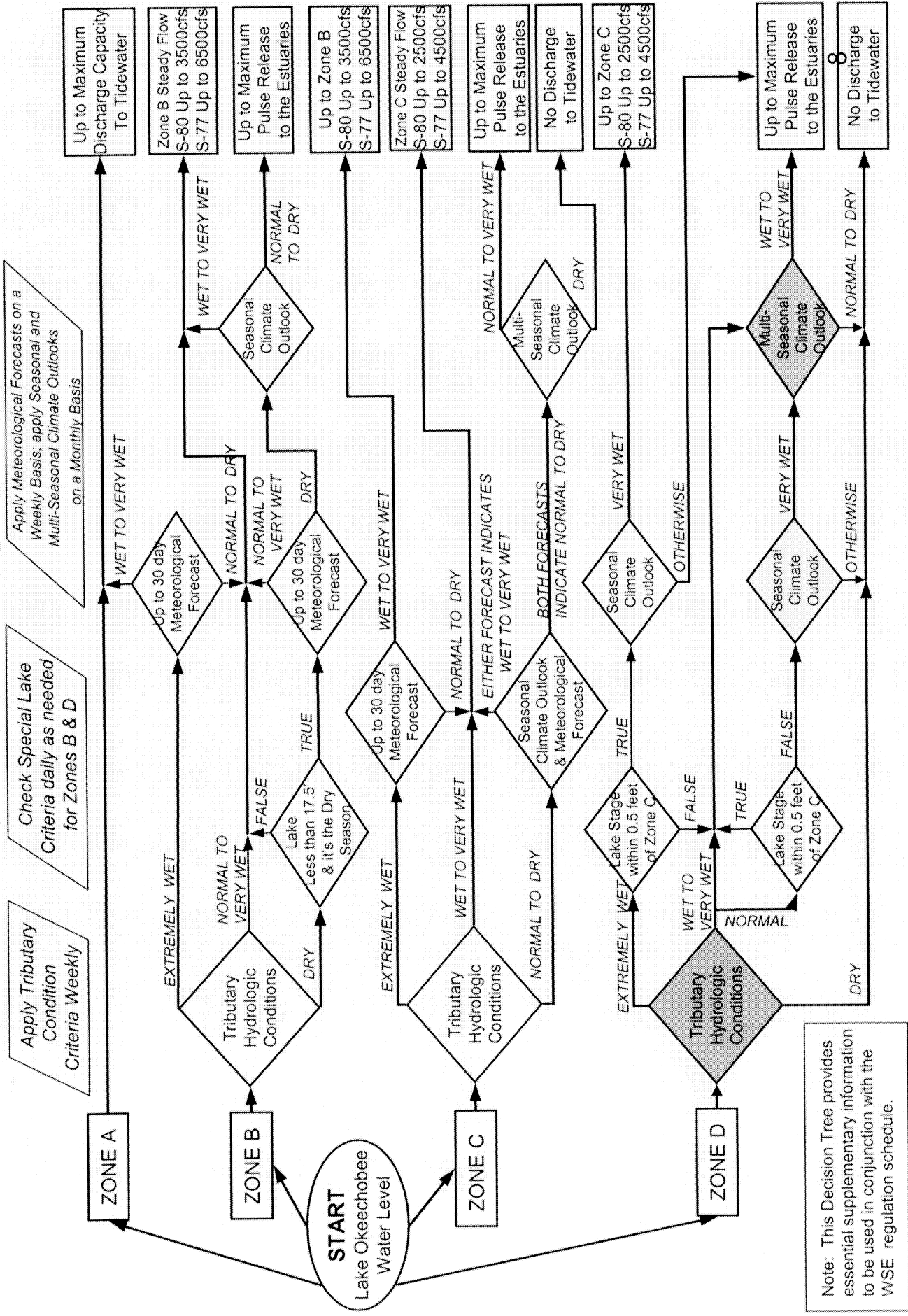
WSE Operational Guidelines Decision Tree

Part 1: Define Lake Okeechobee Discharges to the Water Conservation Areas



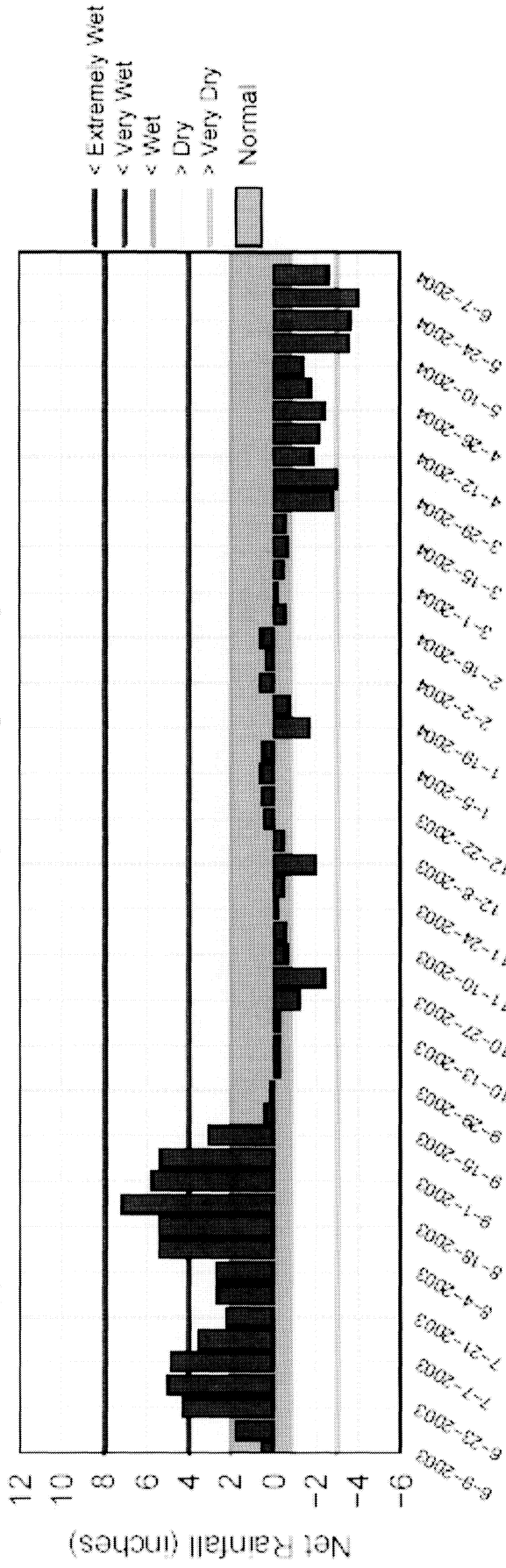
WSE Operational Guidelines Decision Tree

Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)

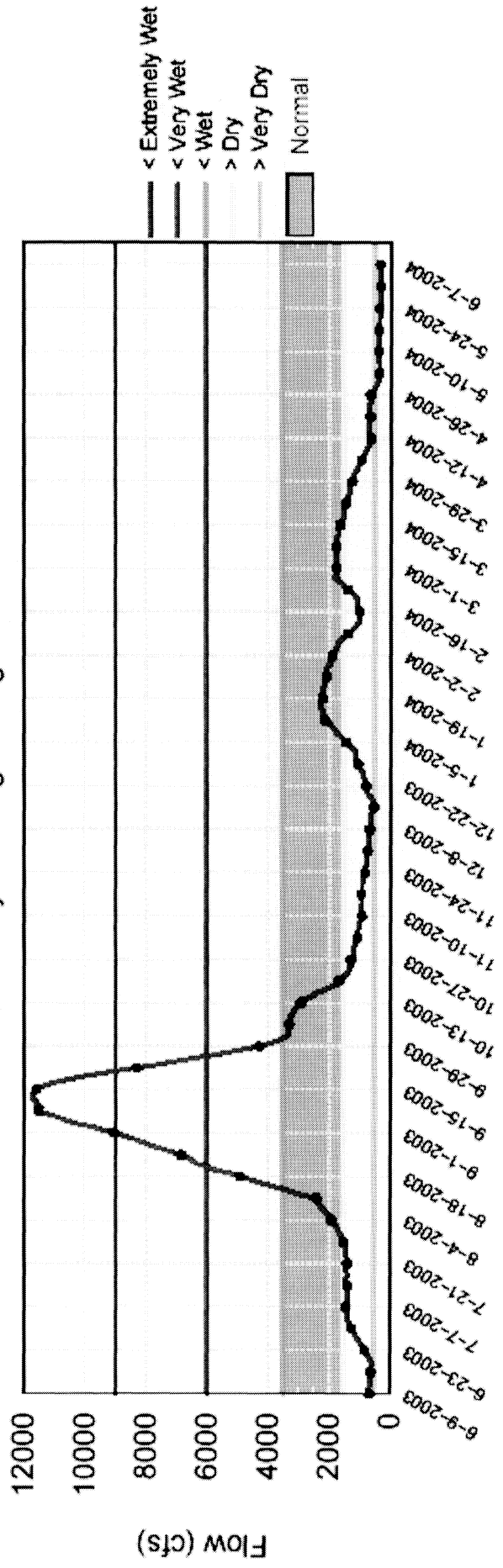


Tributary Basin Condition Indicators as of June 08, 2004

Upper & Lower Kissimmee 30-day Running Average of Net Rainfall



S-65E 14-day Running Average of Flow



Classification of Tributary Hydrologic Conditions

Class Limits for Tributary Hydrologic Conditions^{*}

Net rainfall [inches] (previous 4 week sum)	S-65E flows [cfs] (previous 2 week mean)	Tributary Condition**
< -3.00	< 500	Very Dry
-3.00 to -1.01	500-1499	Dry
-1.00 to 1.99	1500-3499	Normal
2.00 to 3.99	3500-5999	Wet
4.00 to 7.99	6000-8999	Very Wet
> = 8	> =9000	Extremely Wet

^{*}Corresponds to Table 7-4 in the Lake Okeechobee Water Control Plan

^{**}Use the wettest classification of the two tributary condition indicators

Classification of Lake Okeechobee Net Inflow Outlook (LONINO)

Seasonal LONINO

Multi-Seasonal LONINO

Classification of Lake Okeechobee Net Inflow Seasonal Outlook*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Seasonal Outlook
> 1.5	> 3.2	Very Wet
1.01 to 1.5	2.11 to 3.2	Wet
0.5 to 1.0	1.1 to 2.1	Normal
< 0.5	< 1.1	Dry

*Corresponds to Table 7-7 in the Lake Okeechobee Water Control Plan

**Volume-depth conversion based on average lake surface area of 467,000 acres

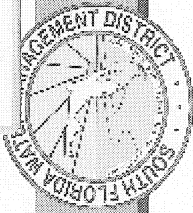
Classification of Lake Okeechobee Net Inflow Multi-Seasonal Outlook*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Multi-Seasonal Outlook
> 2.0	> 4.3	Very Wet
1.51 to 2.0	3.21 to 4.3	Wet
0.5 to 1.5	1.1 to 3.2	Normal
< 0.5	< 1.1	Dry

*Corresponds to Table 7-10 in the Lake Okeechobee Water Control Plan

**Volume-depth conversion based on average lake surface area of 467,000 acres

www.sfwmd.gov/org/pld/hsm/reg_app/lok_reg



LAKE OKEECHOBEE OPERATIONS

Current Week

- [Executive Summary](#)
- [Technical Summary](#)

Decision Tree

- [Part 1: WCAs](#)
- [Part 2: Estuaries](#)

[Archived Summaries](#)

W S E

Water Supply & Environment

- [Schedule with Rules](#)
- [Classification Tables](#)

Lake Okeechobee

- [Water Report](#)
- [Stage Hydrograph](#)

Tributary Conditions

- [Current Conditions](#)
- [Archived Conditions](#)

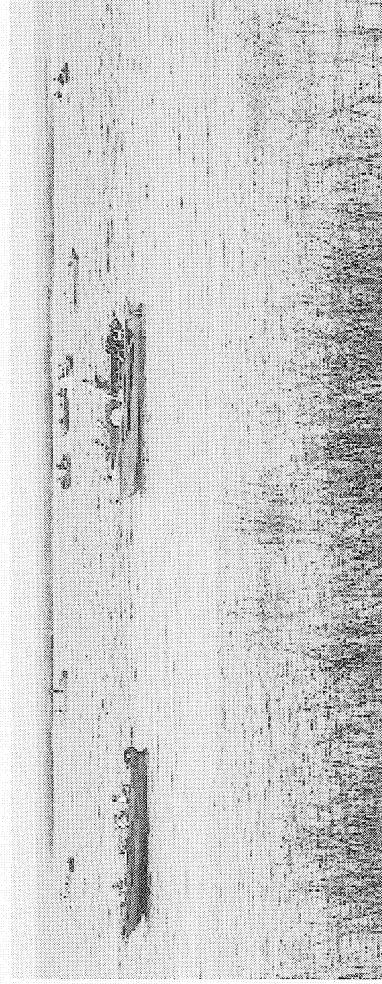
SFWMD Weather

CPC Climate Outlooks

- [Seasonal Window](#)

WSE

WSE, which is short for Water Supply/Environmental, is the new regulation schedule that was approved in July 2000 for the regulation of Lake Okeechobee water levels. Detailed analysis demonstrated that WSE's performance is equal to, or better than the previous regulation schedule, Run 25, for flood protection, water supply, and environmental objectives, including benefits to the lake ecosystem. The WSE regulation schedule incorporates tributary hydrologic conditions and climate forecasts into the operational guidelines and is used in conjunction with the Operational Guidelines Decision Tree. The Decision Tree is divided into 2 parts. Part 1 defines Lake Okeechobee discharges to the Water Conservation Areas and Part 2 defines Lake Okeechobee discharges to tidewater (the estuaries). The operational flexibility of the WSE schedule allows for adjustments to be made in the timing and magnitude of Lake Okeechobee regulatory discharges based on conditions in the Lake tributary basins and in the extended meteorological and climate outlooks.



Classification Limit Adjustments

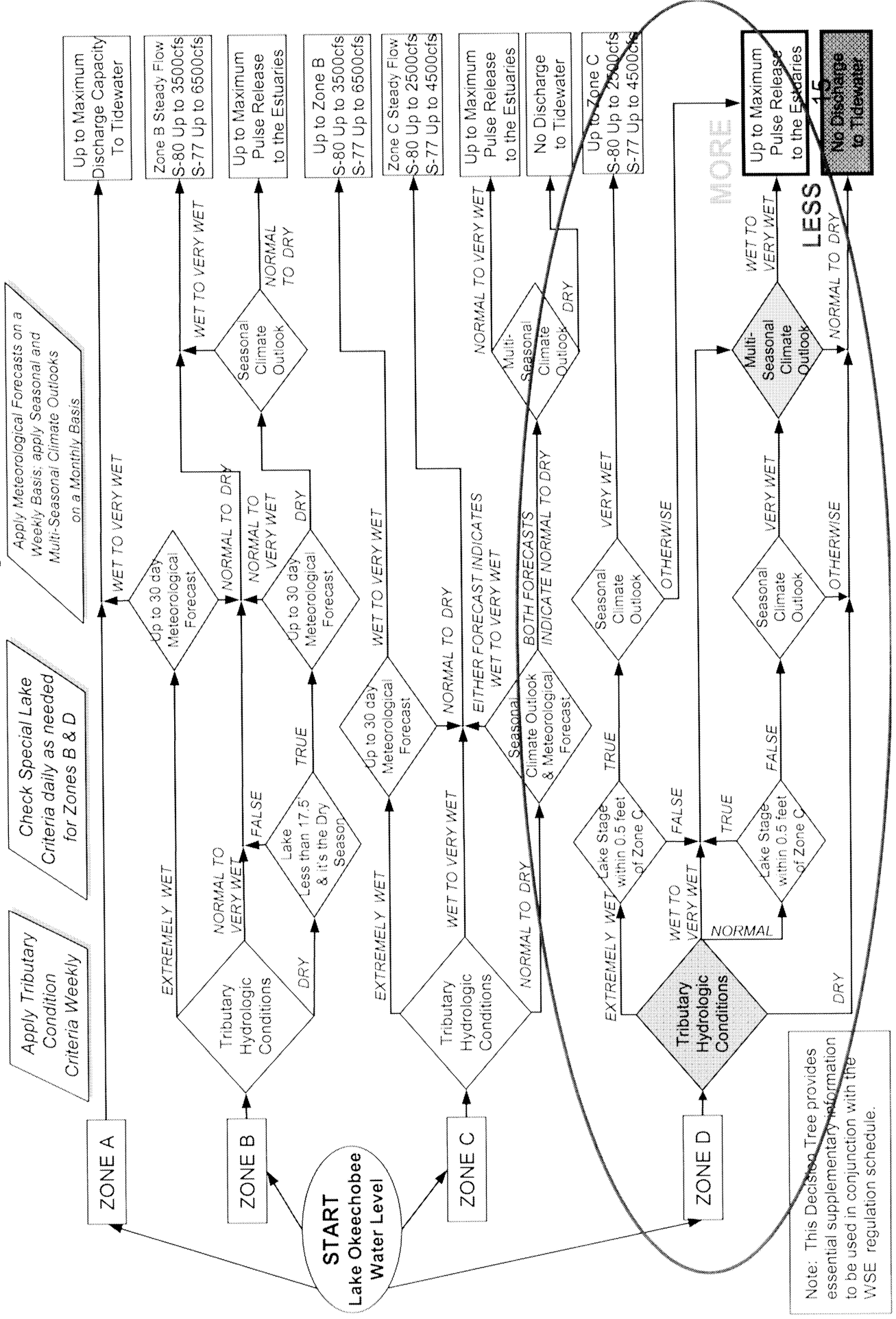
LOK Regulation Schedule (WSE) Improvements

- Class Limit Adjustments

- Goal: Improve performance of WSE with minimal changes to the schedule
- Strategy: Adjust class limits for...
 - Tributary Hydrologic Conditions
 - Seasonal LONINO
 - Multi-Seasonal LONINO
- General Objective: Increase frequency of Zone D pulse releases to improve in-lake performance without significantly impacting estuary & water supply performance.

WSE Operational Guidelines Decision Tree

Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)



CLA-Changes in Tributary Conditions

S-65E 14-day moving average flow (cfs)

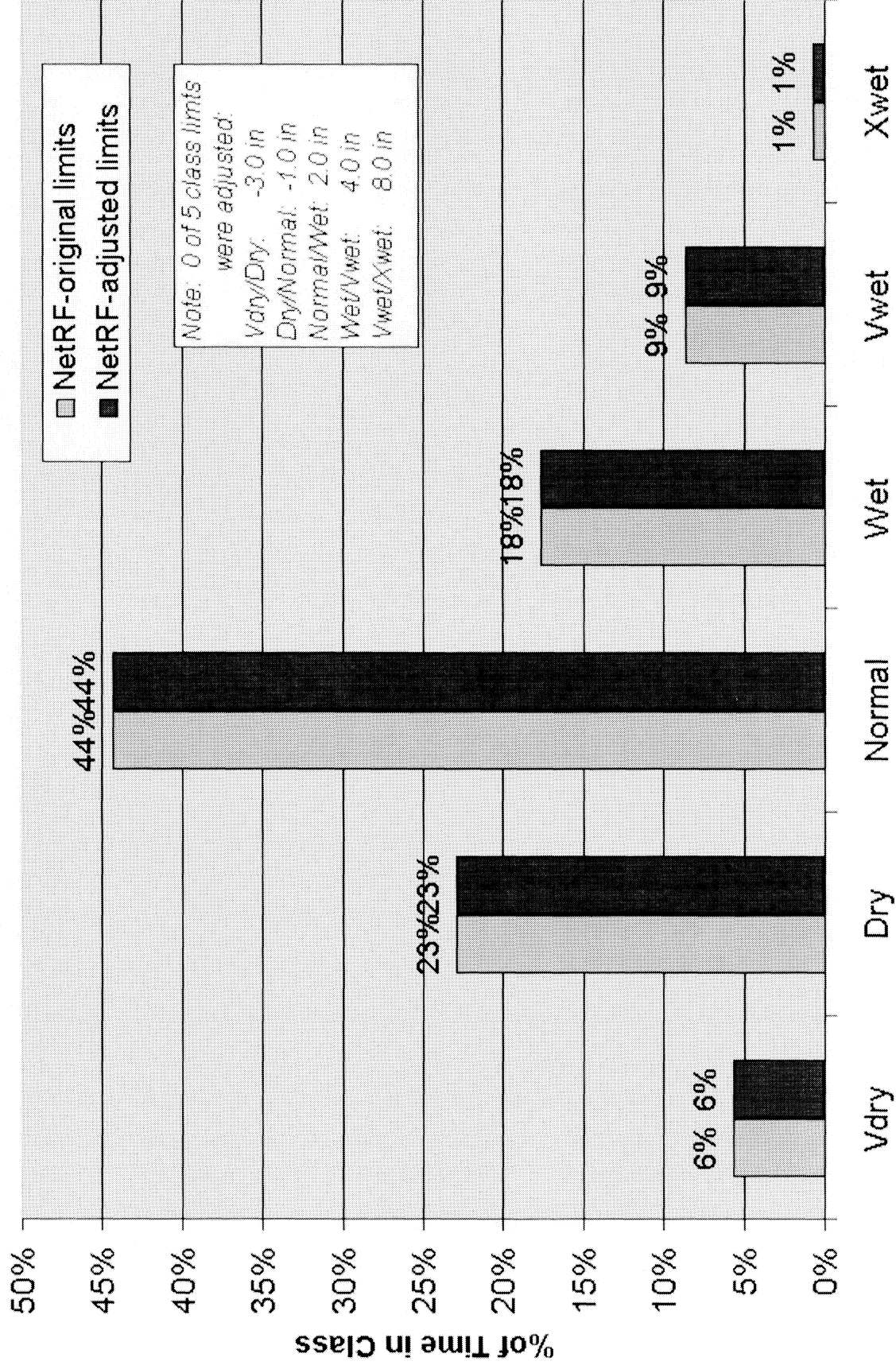
Extremely Wet	9000 cfs
Very Wet	6000 cfs
Wet	3500 cfs
Normal	1500 to 500 cfs
Dry	500 to 200 cfs
Very Dry	

CLA-Changes in LONINO

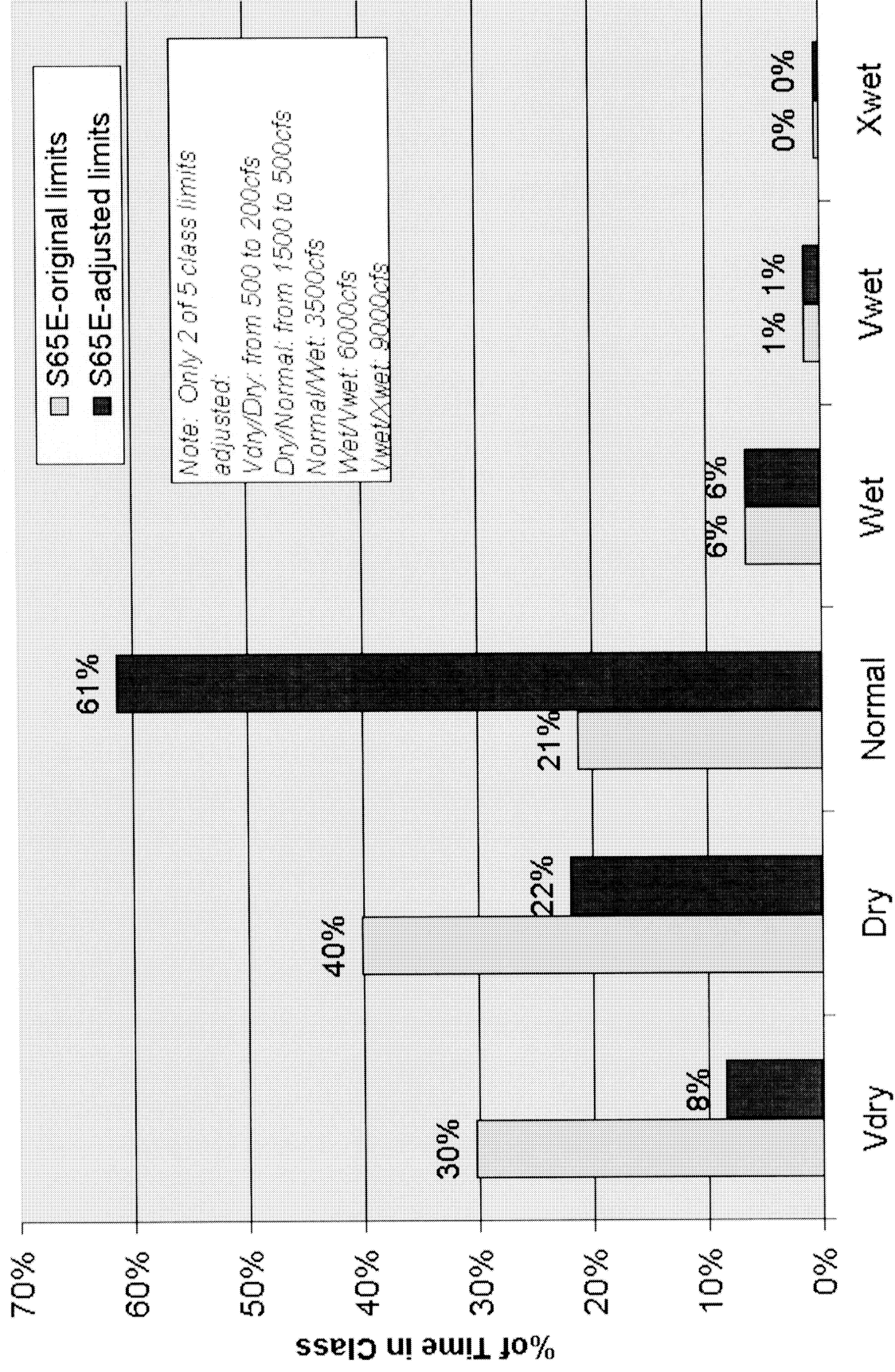
LOK Equivalent Depth (feet)

• Seasonal	• Multi-seasonal
Very Wet _____	Very Wet _____ 4.3'
Wet _____	Wet _____ 3.2' to 2.5'
Normal _____	Normal _____ 1.1'
Dry _____	Dry _____

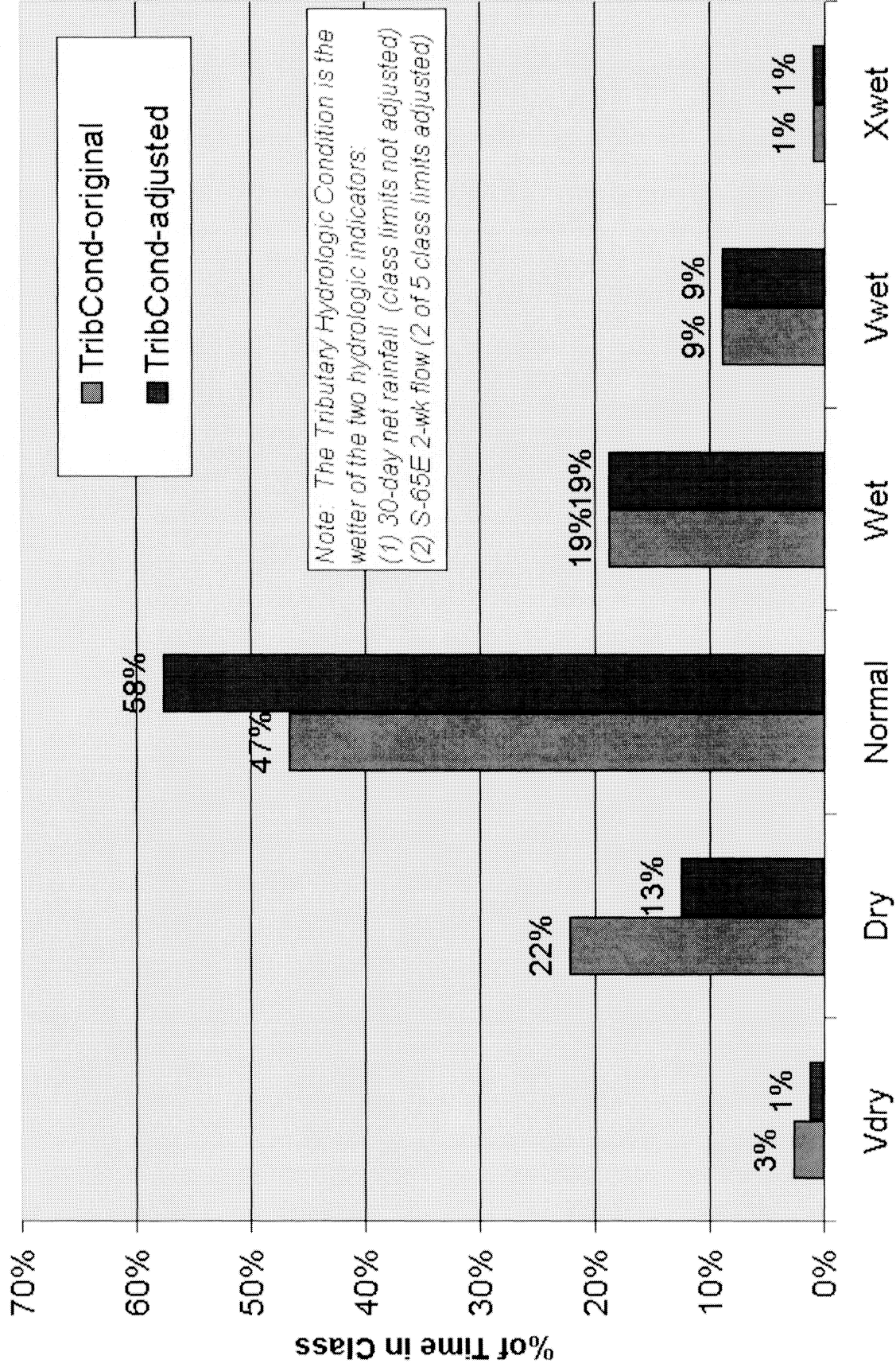
Upper & Lower Kissimmee Net Rainfall Distribution



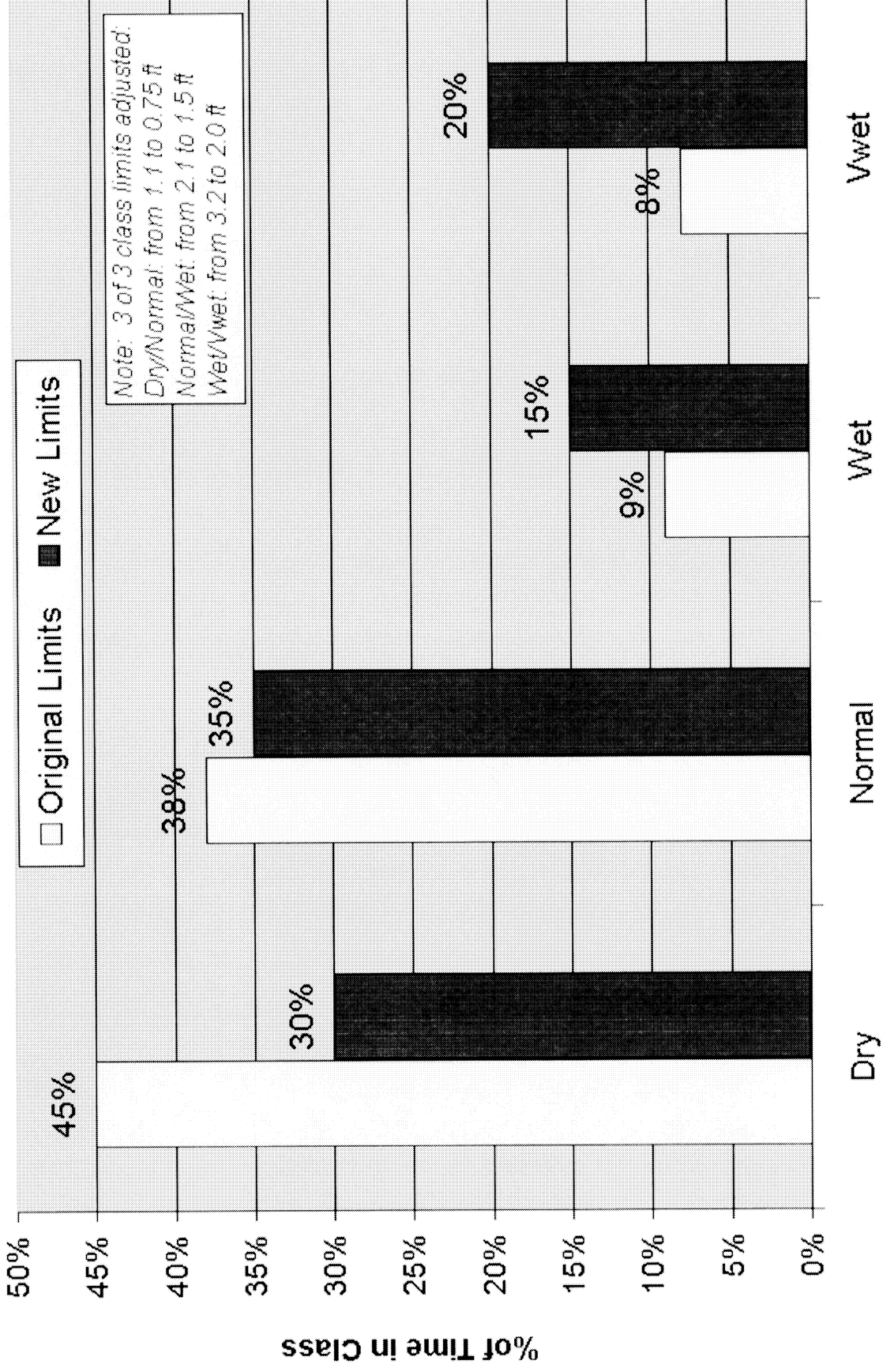
S-65E Flow Distribution



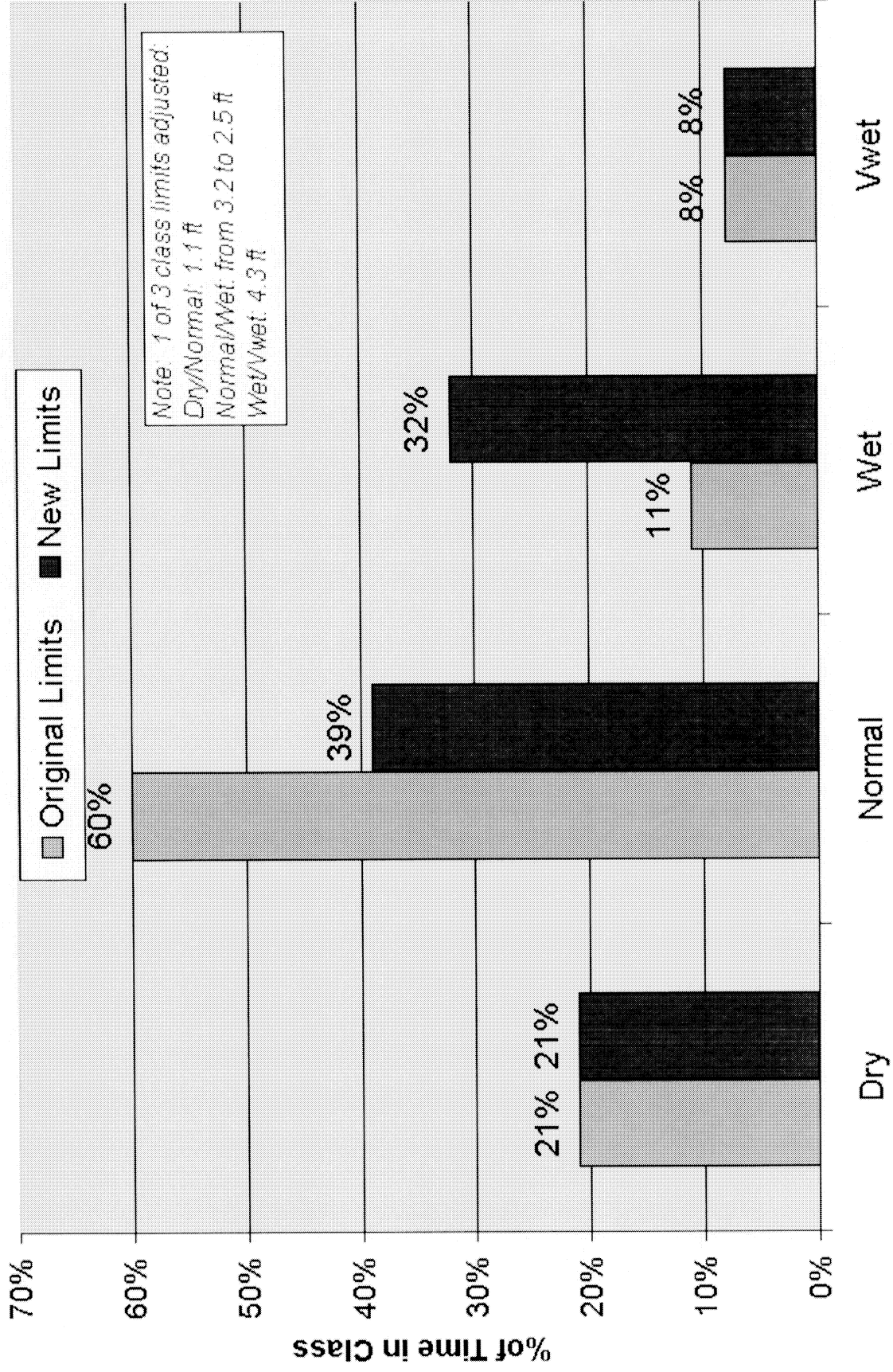
Tributary Hydrologic Condition Distribution



Seasonal LONINO Distribution



Multi-Seasonal LONINO Distribution



What changes in WSE performance can be expected from the Class Limit Adjustments?

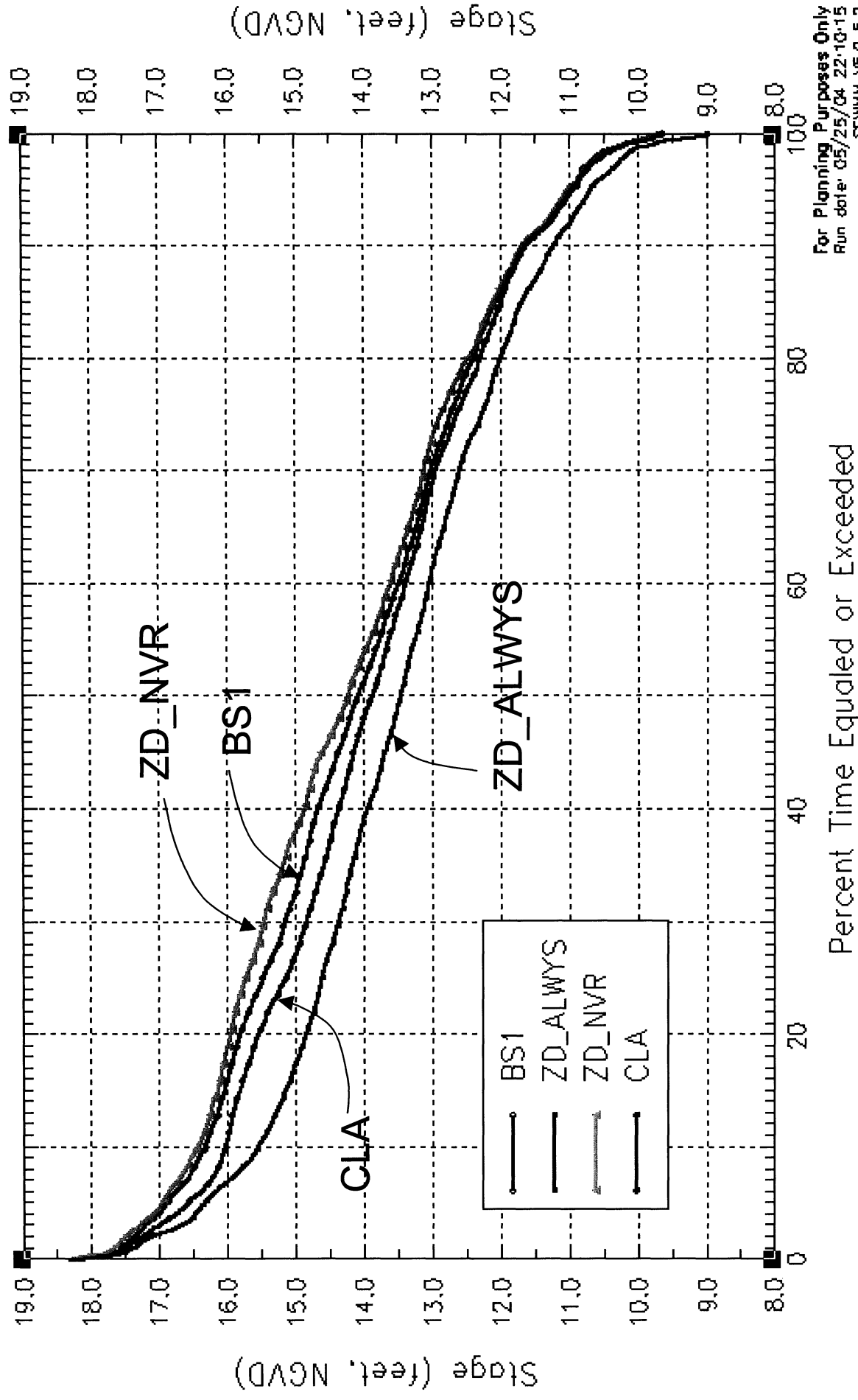
- Office of Modeling SFWMM simulation results presented 07-June-2004
- Multi-objective balance of WSE with CLA was better than the other 6 alternative schedule modifications
- Performance of the 36-yr simulation relative to baseline:
 - LOK Flood Protection: substantially better
 - LOK Ecology: slightly better
 - Water Supply: no change
 - Caloosahatchee Estuary Low flows: no change
 - Caloosahatchee Estuary High flows: slightly worse
 - St.Lucie Estuary Low flows: slightly better
 - St.Lucie Estuary High stressful flows: slightly worse
 - St.Lucie Estuary High damaging flows: slightly better
 - Everglades: TBD

Summary of SFWMM Results

Performance summary table for the WSE-SIS model runs. Performance is compared to the Base run, and symbols indicate the following: ++ = substantially better than Base, + = slightly better than Base, 0 = not different from Base, - = slightly worse than Base, and - - = substantially worse than Base. Everglades is still under evaluation

Simulation	LOK Flood	LOK Ecology	CE High Flow	CE Low Flow	SLE High Flow	SLE Low Flow	LOSA	LEC
LE1	0	0	0	++	0	0	-	0
LE2	0	0	0	++	0	0	-	0
PDI	0	0	0	++	-	+	-	0
A5	0	+	+	++	-	++	--	0
A6	0	+	0	++	-	++	--	0
A7	+	++	-	++	0	+	--	--
CLA	++	+	-	0	-	+	0	0
ZD_ALWAYS	++	++	-	++	0	++	--	--
ZD_NVR	0	--	+	0	-	-	0	0

Stage Duration Curves for Lake Okeechobee



For Planning Purposes Only
Run date: 05/25/04 22:10:15
SFWM V5 Q.5.2
Script used: hyd_dur scr, V1 11
Filename: lak_dai_sfigdur fig

WSE Schedule Zone Statistics

% of time (36-yr simulation) that LOK stage was ...	WSE BASE	ZD ALWAYS	ZD NEVER	CLA
... in Zone A	0	0	0	0
... in Zone B	1	1	2	1
... in Zone C	6	3	7	4
... in Zone D	36	22	38	33
... in Zone D3	12	3	15	9
... in Zone D2	12	5	12	11
... in Zone D1	12	14	10	13
... below ZoneD	57	74	49	62
... in Zone D & Part 1 called for max practicable south	62	71	62	75
... in Zone D & Part 2 called for pulses to Estuaries	17	100	1	34

Source: SFWMMv5.4.2 Simulations (June 2004)
SFWMM simulations driven by 1965-2000 rainfall, etc. (36yrs or 13149 days)

How much would the CLA have changed the WSE decision tree outcomes during the past 2 years?

- During the 100 weeks from 8July2002 to 31May2004, LOK stage was in Zone D for 85 weeks.
- Of the 85 Zone D weeks...

Decision Tree Outcome	Actual	Estimated with CLA
Part 1 (Max practicable to WCAs)	69 weeks (81%)	83 weeks (98%)
Part 2 (up to L3 pulse to Estuaries)	25 weeks (29%)	49 weeks * (58%)

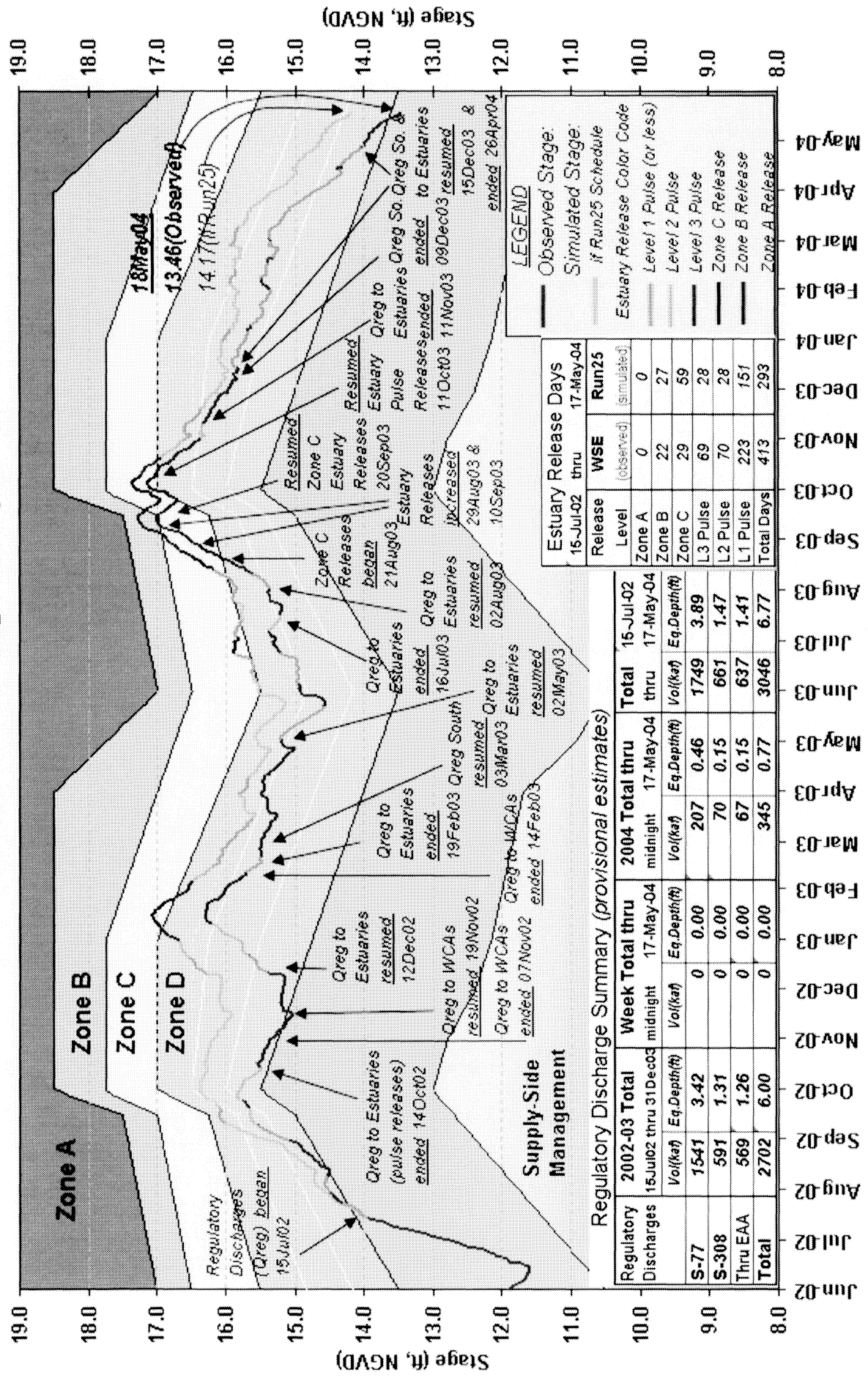
* 14 of the 24 additional weeks were during April-July of 2003. The additional pulse releases would likely have reduced the need for Zone C releases in Aug-Sep of 2003.

Conclusions & Recommendations

- WSE performance can be improved by making class limit adjustments (CLA) to the classifications of the tributary hydrologic condition and the LONINO.
- Simulated performance of the CLA was superior to the other alternatives evaluated.
- The CLA doubles the % of time the WSE schedule calls for pulse releases while in Zone D.
- The CLA might be easily implemented by the USACE since it only requires changing 6 numbers in the federal Water Control Plan.
- Suggest WRAC Working Group recommend CLA to WRAC and USACE for further NEPA (EA) analysis.



Lake Okeechobee Stage Comparison



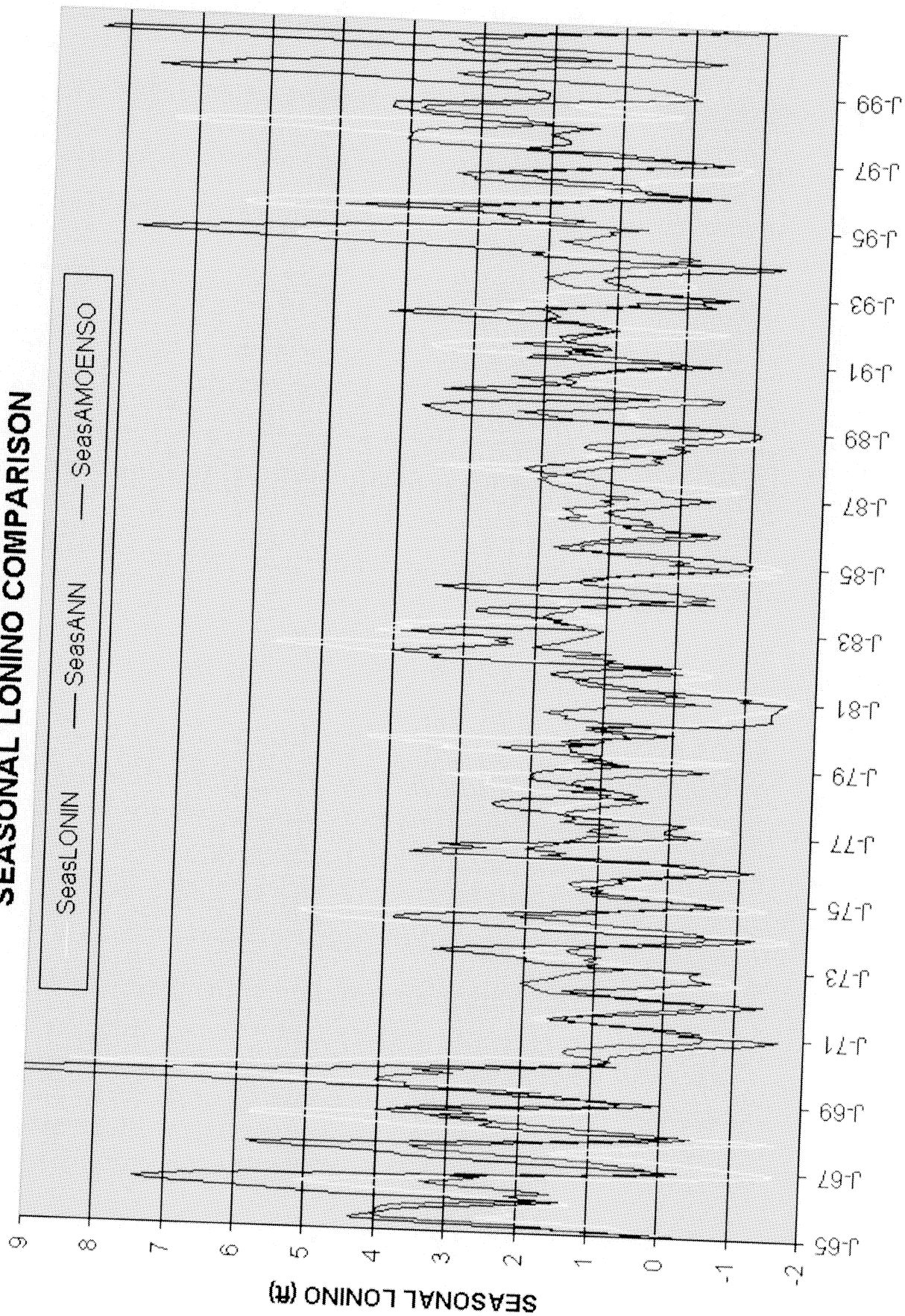
Pulse Releases - Three Levels

Table 7-11 Master Water Control Plan for Lake Okeechobee

Day of Pulse	Level I		Level II		Level III	
	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)
1	1200	1000	1500	1500	1800	2000
2	1600	2800	2000	4200	2400	5500
3	1400	3300	1800	5000	2100	6500
4	1000	2400	1200	3800	1500	5000
5	700	2000	900	3000	1000	4000
6	600	1500	700	2200	900	3000
7	400	1200	500	1500	600	2000
8	400	800	500	800	600	1000
9	0	500	400	500	400	500
10	0	500	0	500	400	500
Average Flow	730	1600	950	2300	1170	3000
Volume (Ac-Ft)	14,480	31,736	18,843	45,621	23,207	59,505
*Equivalent Depth (ft)	0.03	0.07	0.04	0.10	0.05	0.13

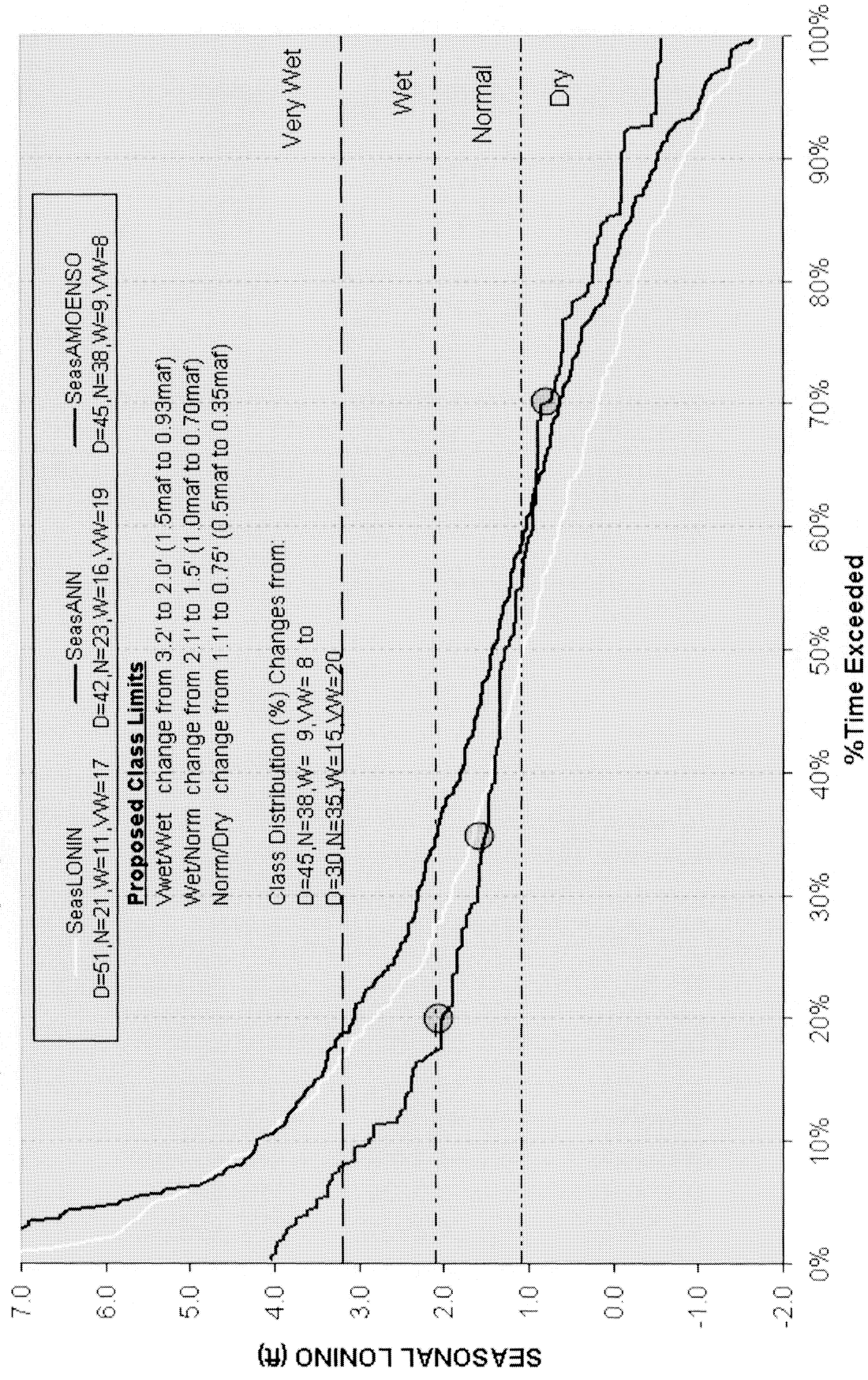
*Volume-Depth conversion based on average lake surface area of 467000 acres

SEASONAL LONINO COMPARISON

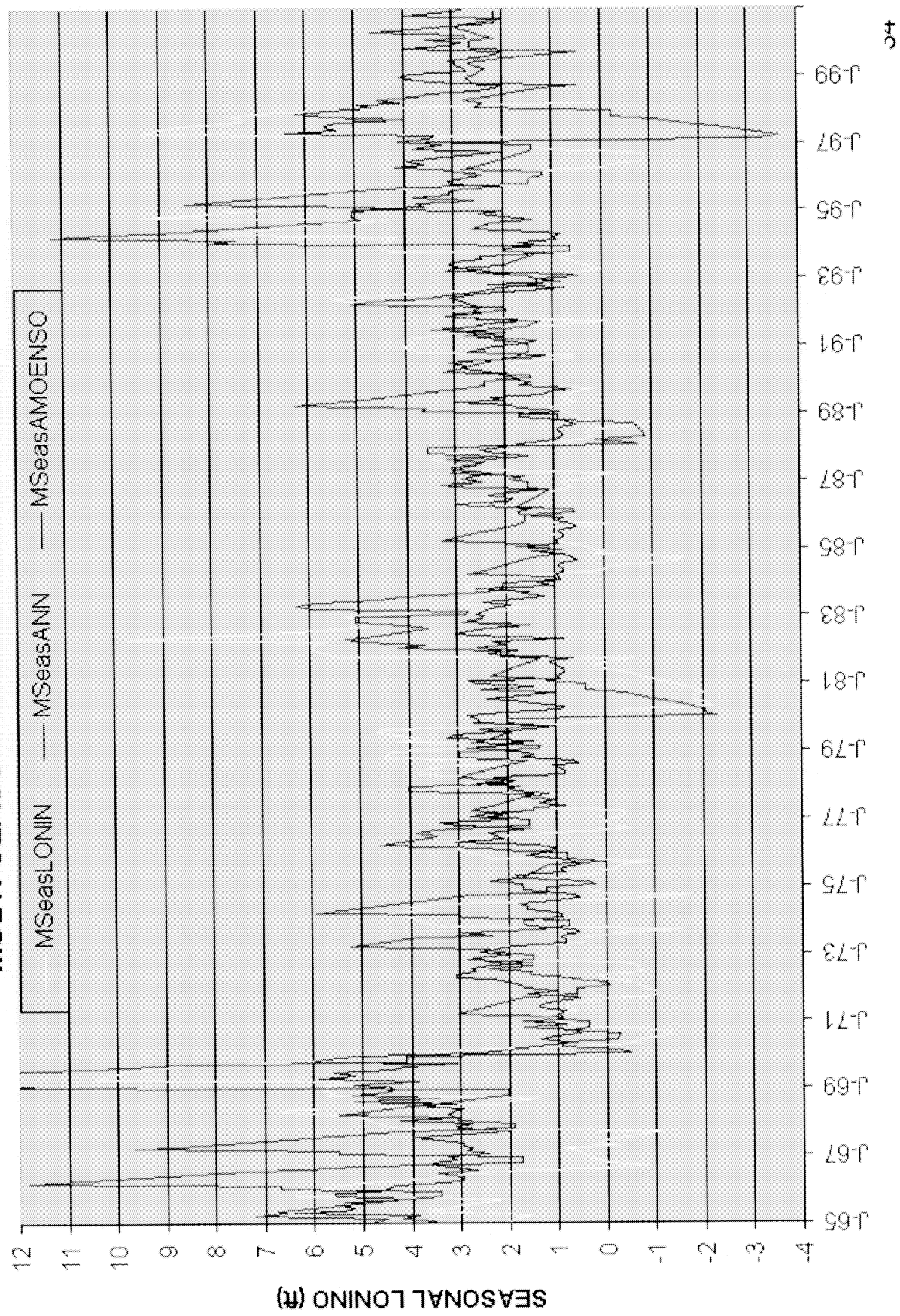


SEASONAL (6mo) LONINO: Exceedence Curve Comparison

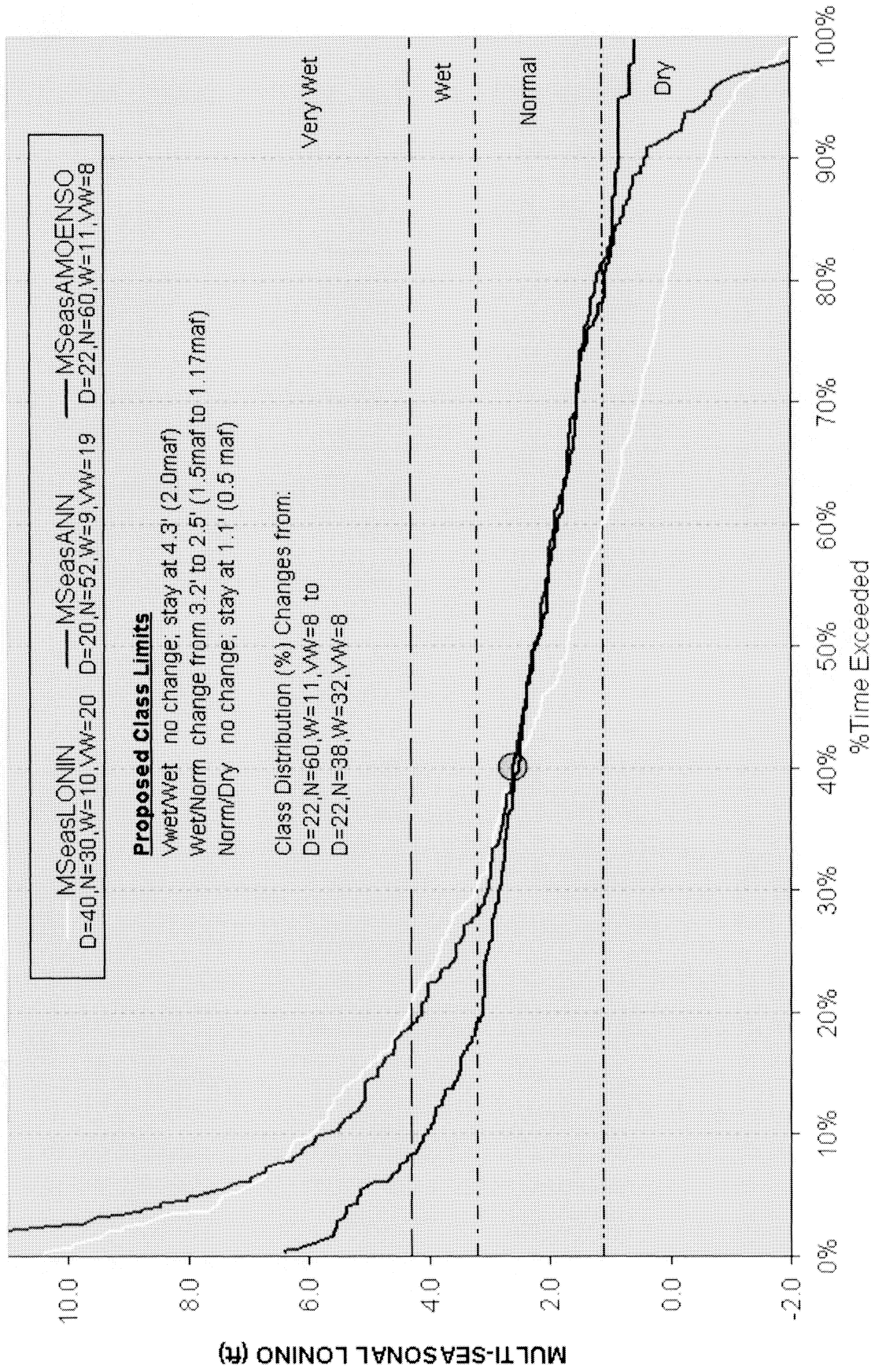
(LONINO = projected Net Inflow, NI = RF - ET + inflows)



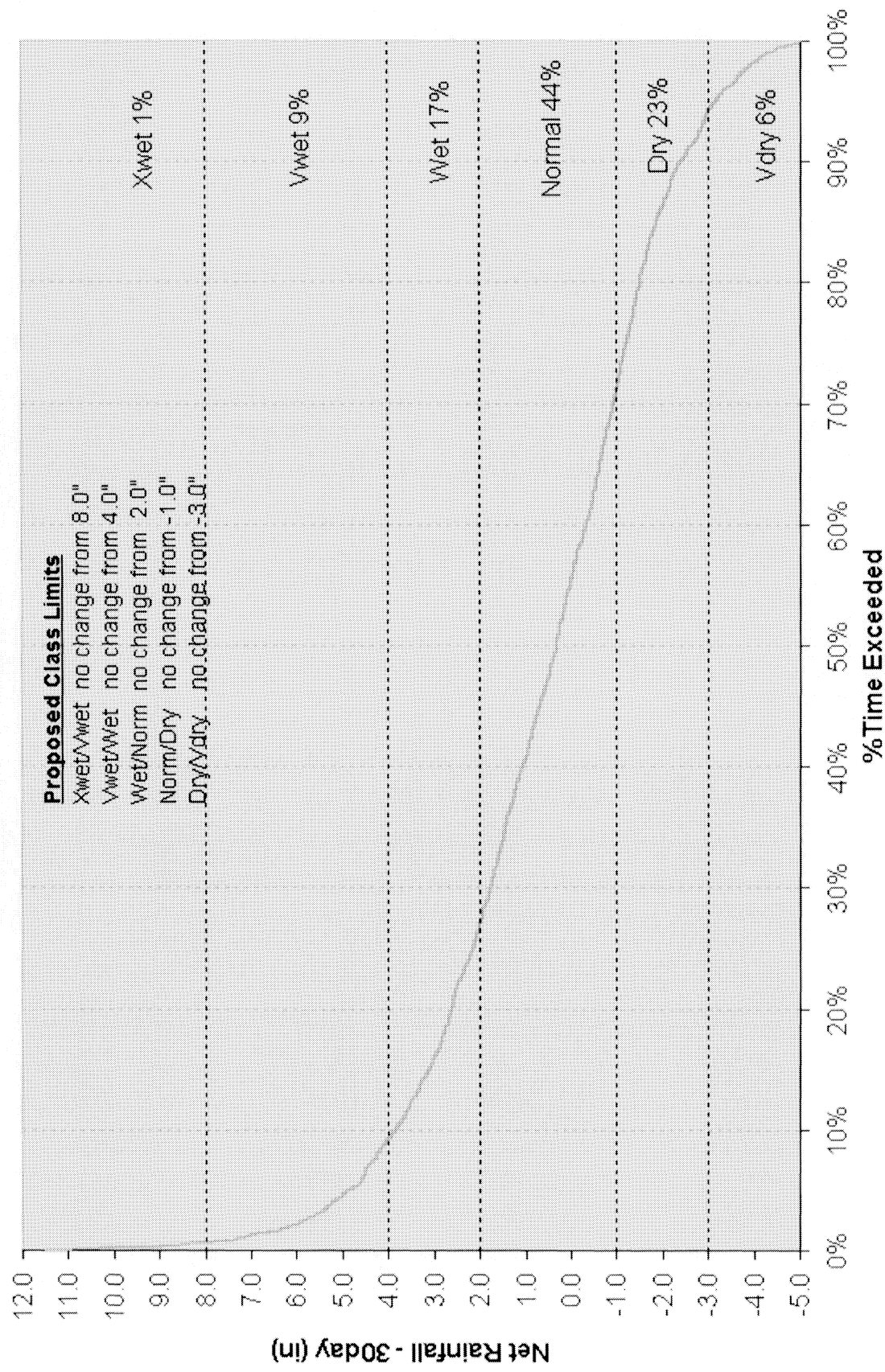
MULTI-SEASONAL LONINO COMPARISON



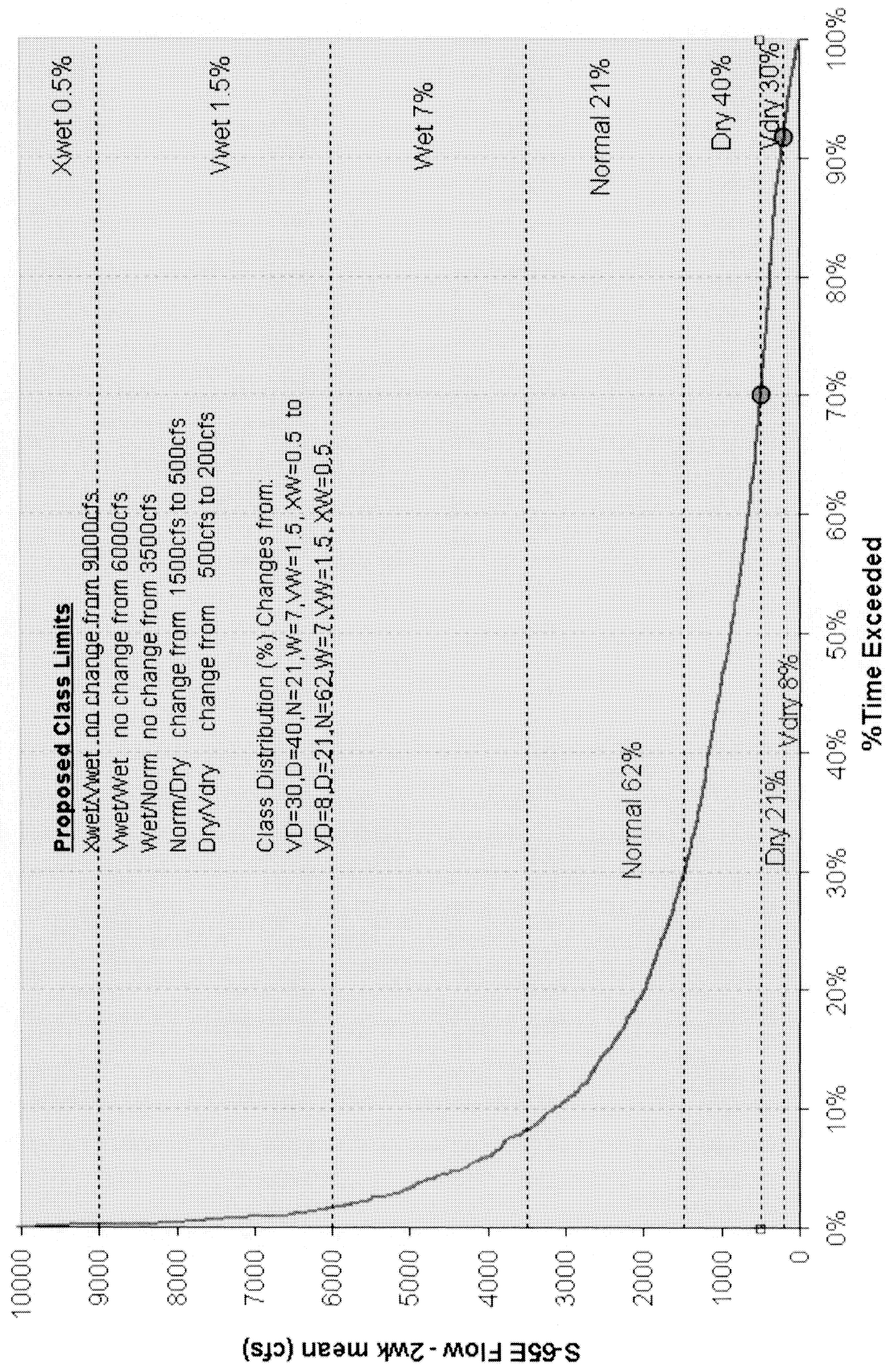
MULTI-SEASONAL (7-12mo) LONINO: Exceedence Curve Comparison
 (LONINO = projected Net Inflow, NI = RF - ET + inflows)



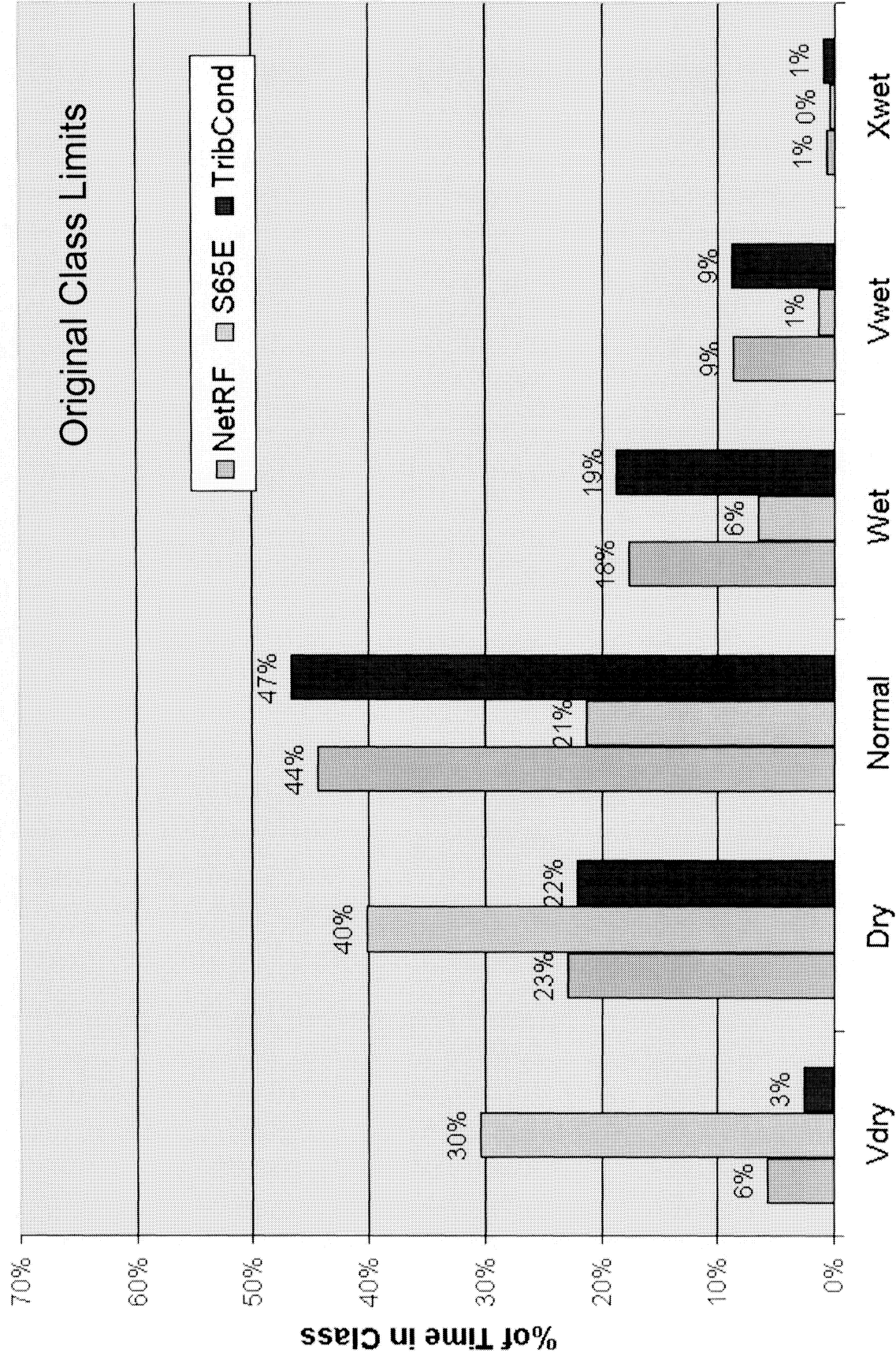
Tributary Condition: Net Rainfall (30day) Exceedence Curve & Thresholds



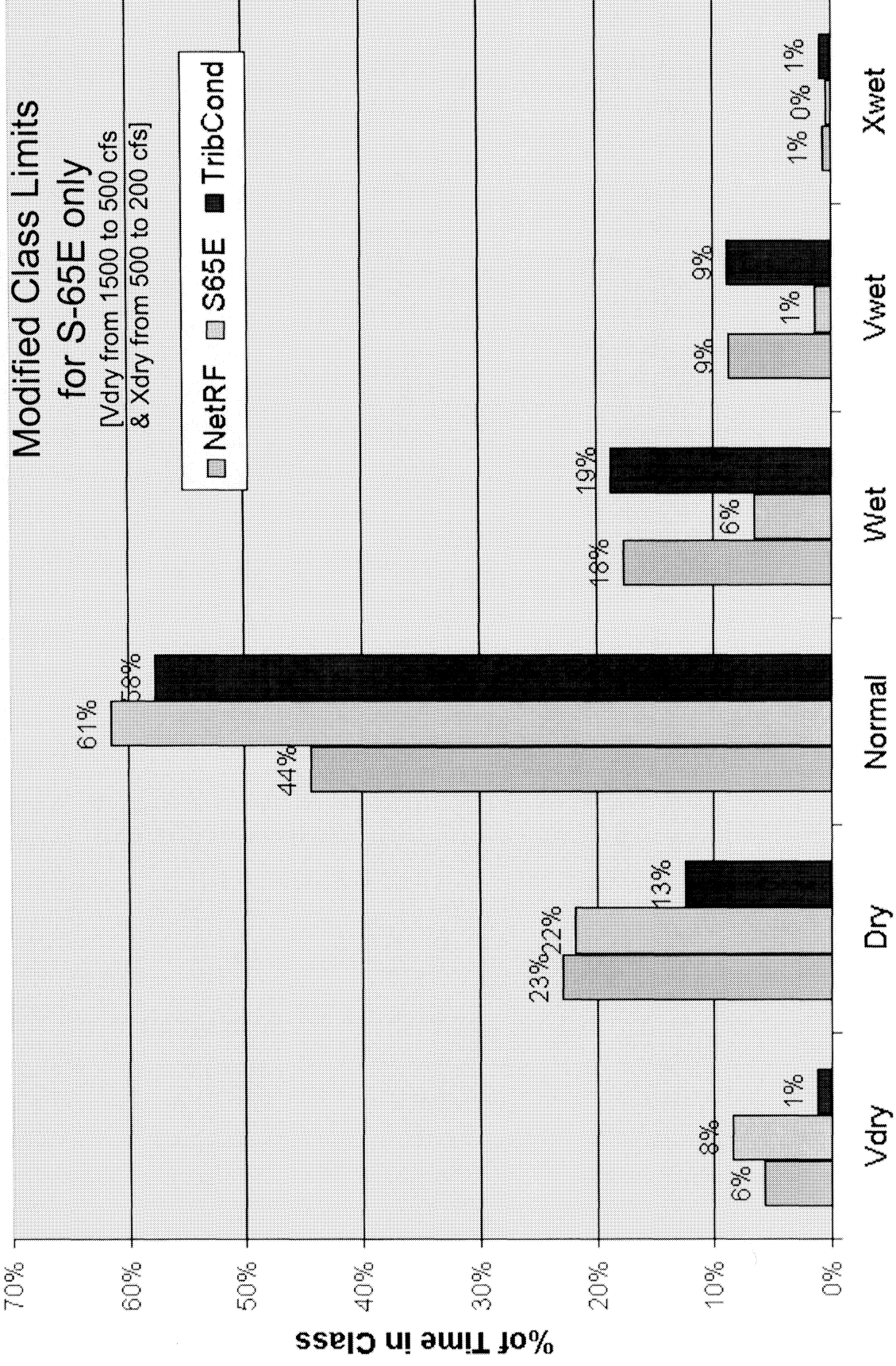
Tributary Condition: S-65E Flow (2week mean) Exceedence Curve & Thresholds



Tributary Hydrologic Condition Distribution



Tributary Hydrologic Condition Distribution



APPENDIX C – PERTINENT CORRESPONDENCE

**MAILING LIST
LAKE OKEECHOBEE
August 2004
(Revised October 2004)**

FEDERAL AGENCIES

Mail list used for temp. Dev. EA
Colors indicate mailing:
Black = NOA with FONSI
Blue = Hard Copy of EA
Green = CD of EA

**CHIEF
US ARMY CORPS OF ENGINEERS
SOUTH FLORIDA OPERATIONS OFFICE
525 RIDGE LAWN ROAD
CLEWISTON, FL 33440-5399**

**JOAN A. BROWDER, PH.D.
RESEARCH ECOLOGIST
SOUTHEAST FISHERIES SCIENCE CENTER
75 VIRGINIA BEACH DRIVE
MIAMI, FL 33149**

**REGIONAL DIRECTOR
NATIONAL PARK SERVICE
75 SPRING STREET SW
ATLANTA, GA 30303 (2 CYS)**

**RICHARD HARVEY
U.S. EPA, REGION 4
400 N. CONGRESS AVENUE, SUITE 120
WEST PALM BEACH, FL 33401**

**EVERGLADES NATIONAL PARK
40001 STATE ROAD 9336
HOMESTEAD, FL 33034 (2 CYS)**

**REGIONAL DIRECTOR
U.S. FISH AND WILDLIFE SERVICE
1875 CENTURY BLVD.
ATLANTA, GA 30345-3301**

**SUPERVISOR
SOUTH FLORIDA ECOSYSTEM OFFICE
U.S. FISH AND WILDLIFE SERVICE
1339 20TH STREET
VERO BEACH, FL 32960-3559**

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LOXAHATCHEE NWR
U.S. FISH AND WILDLIFE SERVICE
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BOYNTON BEACH, FL 33437-9741**

**REFUGE MANAGER, J.M. DING DARLING
NATIONAL WILDLIFE REFUGE
1 WILDLIFE DRIVE
SANIBEL, FL 33957**

**BOB PACE
U S FISH AND WILDLIFE SERVICE
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**STATE CONSERVATIONIST
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U.S. DEPARTMENT OF JUSTICE
ENVIRONMENTAL AND NATURAL
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MAIMI, FL 33132-2111**

**BUREAU OF INDIAN AFFAIRS
6075 STIRLING ROAD
HOLLYWOOD, FL 33024**

**REGIONAL DIRECTOR
NATIONAL MARINE FISHERIES SERVICE
9721 EXECUTIVE CENTER DR. N
ST. PETERSBURG, FL 33702-2449**

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U.S. GEOLOGICAL SURVEY
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HABITAT CONSERVATION DIV.
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HABITAT CONS DIVISION
SOUTHEAST REGIONAL OFFICE
9721 EXECUTIVE CENTER DRIVE N
ST PETERSBURG FL 33702**

**NAT. MARINE FISHERIES SERVICE
CHIEF PROTECTED SPECIES BRANCH
9721 EXECUTIVE CENTER DR. NORTH
ST. PETERSBURG, FL 33702-2449**

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FL DEPT OF ENV PROTECTION
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TALLAHASSEE FL 32399-3000 (16CY)**

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TALLAHASSEE, FL 32399-1650**

**SECRETARY
INTERGOVERNMENTAL AFFAIRS POLICY UNIT
THE CAPITOL, ROOM 1603
TALLAHASSEE, FL 32399-0001**

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FISH COMMISSION
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TALLAHASSEE, FL 32399-1600

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STATE HISTORIC PRESERVATION OFFICER
DIVISION OF HISTORICAL RESOURCES
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FL GAME & FRESHWATER FISH COMM
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SOUTH FL WATER MANAGEMENT DISTRICT
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OKEECHOBEE, FL 34972

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FLORIDA GAME & FRESH WATER COMM.
3200 T.M. GOODWIN ROAD
FELLESMEER, FL 32948

CAL NEIDRAUER
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MIAMI, FL 33130-1540

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HIGHLANDS COUNTY ADMINISTRATION
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MARTIN COUNTY ADMINISTRATION
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DRAWER CA01 P.O. BOX 9005
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OKEECHOBEE, FL 34973

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MOORE HAVEN, FL 33471

POLK COUNTY BOARD OF
COUNTY COMMISSIONERS
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MIAMI, FL 33165

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LAKE WORTH, FL 33467

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5530 SUNSET DRIVE
MIAMI, FL 33143

TROPICAL AUDUBON SOCIETY
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MIAMI, FL 33131

RIDGE AUDUBON SOCIETY
1122 CIRCLE DRIVE
LAKE WALES, 33853

FRIENDS OF THE EVERGLADES
244-A WESTWARD DRIVE
MIAMI SPRINGS, FL 33166

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BOCA RATON, FL 33432

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DEFENDERS OF WILDLIFE
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CITIZENS ASSOCIATION
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FORT MYERS, FL 33908

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FL SPORTSMEN CONSERVATION ASSOC.
7407 SOUTHERN BLVD.
WEST PALM BEACH, FL 33908

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COOPER CITY, FL 33328

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POMPANO, FL 33060-7797

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CONSERVATION ASSOC.
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ST LUCIE RIVER INITIATIVE INC.
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FLORIDA WILDLIFE FEDERATION
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TRUST FOR PUBLIC LANDS
7900 RED ROAD SUITE 25
MIAMI, FL 33143

MR. JOHN RAINS, JR.
IZAAK WALTON LEAGUE
5314 BAY STATE ROAD
PALMETTO, FL 32561-9712

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DEFENSE COUNCIL
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NEW YORK, NY 10011

MR. ANDREW SCHOCK
NATIONAL WILDLIFE FEDERATION
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DR. SEYMORE GOLDWEBBER
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STITT RANCH INC.
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CLEWISTON, FL 33440-9747

VEE PLATT
FRIERSON FARM
P.O. BOX 1686
CLEWISTON, FL 33440

MR. ART DARLING
DAIRY FARMERS INC.
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MAITLAND, FL 32751

MS. BARBARA MIEDEMA
SUGAR CANE GROWERS COOPERATIVE
P.O. BOX 666
BELLE GLADE, FL 33430-5556

FLORIDA CITRUS MUTUAL
P.O. BOX 89
LAKE LAND, FL 33802

MR. JOHN W. DUNCKELMAN
FLORIDA SUGAR CANE LEAGUE, INC.
P.O. DRAWER 1208
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MR. TOM JONES
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MR. JOE PEARCE
FLORIDA CATTLEMAN'S ASSOCIATION
P.O. BOX 421929
KISSIMMEE, FL 34742-1929

MR. JOE PEARCE
FLORIDA CATTLEMAN'S ASSOCIATION
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KISSIMMEE, FL 34742-1929

MR. PHIL STRAZZULLA
INDIAN RIVER CITRUS LEAGUE
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7925 20TH STREET
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LEWIS FRIEND FARMS, INC.
ATTN: LEWIS FRIEND
460 STATE MARKET ROAD
PAHOKEE, FL 33476

UNITED STATES SUGAR CORP.
ATTN: MR. FRANKLYN JONES, P.E.
DIRECTOR, ENGINEERING PLANNING
P.O. DRAWER 1207
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BRYAN BEER
GUTWEIN GROVES, INC.
P.O. BOX 158
LABELLE, FL 33935

JOHN DUNKLEMAN
FLA SUGAR CANE LEAGUE
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DAVE QUIRING
BERRY GROVE CORPORATION
P.O. BOX 459
LABELLE, FL 33935

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ATLANTIC SUGAR ASSOC., INC.
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BELLE GLADE, FL 33430

BUBBA WADE
111 PONCE DE LEON
CLEWISTON, FL 33440

LAWRENCE D. WORTH
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U.S. SUGAR CORPORATION
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NATIVE AMERICAN TRIBES

**MR MITCHELL CYPRESS, CHAIRMAN
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**MR BILLY CYPRESS, CHAIRMAN
MICCOSUKEE TRIBE OF INDIANS OF FLORIDA
P O BOX 440021 TAMiami STATION
MIAMI FL 33144**

**MR. STEVE TERRY
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MIAMI, FL 33144**

**MR. CRAIG TEPPER
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S.W. FLA REGIONAL PLANNING COUNCIL
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N. FT. MYERS, FL 33918**

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4200 HWY 441 SE
OKEECHOBEE, FL 34974**

**LESLEY S. SMITH
TOWN COUNCIL PRESIDENT
TOWN OF PALM BEACH
360 SOUTH COUNTY ROAD
PALM BEACH, FL 33480**

**LEE CHAMBERLAIN, PRESIDENT
EVERGLADES COORDINATING COUNCIL
7901 WEST 25TH COURT
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OKEECHOBEE, FL 34974**

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DRAKE RANCH
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INDIAN RIVERKEEPER
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**ARDIS HAMMOCK
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PAHOKEE WATER CONTROL DISTRICT
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STITT RANCH
ROUTE 2 BOX 170
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1450 MERRIHUE DRIVE
NAPLES, FL 34102**

**DISTRICT II
COUNTY COMMISSIONER
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**UTILITY DIRECTOR
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MIAMI, FL 33131**

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LANDERS & PARSONS
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**MS. RUTH CLARK
LEAGUE OF WOMEN VOTERS, BROWARD
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POMPANO, FL 33060-7797**

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CLEWISTON, FL 33440**

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CITY MANAGER
171 N. LAKE AVE.
PAHOKEE, FL 33476**

**THE ARTHUR MARSHALL FOUNDATION
AND THE FLORIDA ENV INST, INC.
P.O. BOX 2621
PALM BEACH, FL 33480**

**THE HONORABLE JOSEPH SPRATT
HENDRY COUNTY BOARD
OF COUNTY COMMISSIONERS
P.O. BOX 1760
LABELLE, FL 33935-1760**

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16086 E. ALAN BLACK BLVD
LOXAHATCHEE, FL 33411**

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INDIANTOWN DRAINAGE DISTRICT
P.O. BOX 806
INDIANTOWN, FL 34956**

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MCARTHUR FARMS INC.
1550 NE 208TH STREET
OKEECHOBEE, FL 34972

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GULF CITRUS GROWERS ASSOCIATION
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LABELLE, FL 33935

JOHN ED BURDESHAW
OKEECHOBEE CHAMBER OF COMMERCE
55 SOUTH PARROTT AVENUE
OKEECHOBEE, FL 34972

LACE K. VITUNAC
CONSERVATION ALLIANCE
ST LUCIE COUNTY
810 KITTERMAN ROAD
PORT ST LUCIE, FL 34952-9017

THE HONORABLE CHARLES W. HARVEY
OKEECHOBEE COUNTY
BOARD OF COUNTY COMMISSIONERS
304 NW 2ND STREET ROOM 106
OKEECHOBEE, FL 34972

TERRANCE C. SALT, EXECUTIVE DIRECTOR
SO FL ECOSYSTEM RESTORATION TASK
FORCE
FLORIDA INTERNATIONAL UNIVERSITY
OE BUILDING, RM. 148
MIAMI, FL 33199

KEN LANGELAND, UNIV OF FLORIDA
INST OF FOOD & AGRI SCIENCES
CENTER FOR AQUATIC PLANTS
7922 N. W. 71ST STREET
GAINESVILLE, FL 32601

SALLY BLACK
TREASURE COAST REG PLANNING
COUNCIL
3228 SW MARTIN DOWNS BLVD
PALM CITY, FL 34990

JEFF KRAUSKOPF
MARTIN BOARD OF COUNTY COMM
2401 SE MONTEREY ROAD
STUART, FL 34996

WAYNE NELSON
12911 NW 160TH STREET
OKEECHOBEE, FL 34972

NATHANIEL REED
BOX 375
HOBE SOUND, FL 33455

DR. PATRICK J. GLEASON
CAMP DRESER & MCKEE, INC
1601 BELVEDERE ROAD
SUITE 211-SOUTH
WEST PALM BEACH, FL 33406

STEVE BAUMGARTNER
CHAMBER OF COMMERCE
115 E. MAIN STREET
PAHOKEE, FL 33476

CHARLES SCHOECH
HIGHLANDS GLADES DRAINAGE DIST
P.O. BOX 2775
PALM BEACH, FL 33480-4306

RICAARDO A. LIMA
OKEELANTA CORPORATION
P.O. BOX 86
SOUTH BAY, FL 33493

LARS LARSEN
OKEECHOBEE WATERWAY ASSOC,
1402 SW 54 TERRACE
CAPE CORAL, FL 33914

ANTHONY J. CLEMENTE, P.E., DIRECTOR
MIAMI-DADE WATER AND SEWER DEPT
4200 SALZEDO STREET
CORAL GABLES, FL 33146

MARINA AND FISH CAMP POSTING

TWIN PALM RESORT
RT. 6 BOX 885
LAKEPORT, FL 33471

OKEECHOBEE AIRBOAT RIDES
220 HWY 78
OKEECHOBEE, FL 34974

BUCKHEAD RIDGE MARINA
OKEECHOBEE, FL 34974

ANGLER'S GUIDE SERVICE
1 SIXTH STREET
OKEECHOBEE, FL 34974

OKEE TANTIE BAIT & TACKLE
10430 HWY 78 WEST
OKEECHOBEE, FL 34974

FAST BREAK
1505 HWY 78 WEST
OKEECHOBEE, FL 34974

BAIT & TACKLE
8591 HWY 78 WEST
OKEECHOBEE, FL 34974

J & S FISH CAMP
9500 S.W. CONNERS'S HWY, #15
OKEECHOBEE, FL 34974

PARKER'S BAIT AND TACKLE
11486 S. E. HWY 441
OKEECHOBEE, FL 34974

LITTLE BIG MAN'S
630 721 LOOP ROAD
MOORE HAVEN, FL 33471

SPORTSMAN'S VILLAGE MARINA
1ST STREET NORTH
MOORE HAVEN, FL 33471

**ROLAND AND MARIAN MARTIN'S
MARINA AND RESORT
920 E. DEL MONTE AVE.
CLEWISTON, FL 33440**

**FISHERMAN'S VILLAGE
1ST STREET NORTH
MOORE HAVEN, FL 33471**

**UNCLE JOE'S MARINA & MOTEL
LIBERTY POINT
CLEWISTON, FL 33440**

**ANGLER'S GUIDE SERVICE
1 SIXTH STREET
OKEECHOBEE, FL 33974**

**JOLLY ROGER MARINA
HWY 27 EAST
CLEWISTON, FL 33440**

**FISHERMAN'S HEAVEN
CUSTOM LURE'S BY SAM
MOORE HAVEN, FL 33471**

**PAHOKEE MARINA
200 UPPER W. LAKEVIEW DRIVE
PAHOKEE, FL 33476**

**SPORTMAN'S VILLAGE MARINA
1ST STREET NORTH
MOORE HAVEN, FL 33471**

**ALVIN'S BAIT & TACKLE
FLORIDA AVENUE
MOORE HAVEN, FL 33471**

**OKEE TANTI BAIT & TACKLE
10430 HWY 78 WEST
OKEECHOBEE, FL 34974**

**FAST BREAK
1505 HWY 78 WEST
OKEECHOBEE, FL 34974**

**BAIT & TACKLE
8591 HWY 78 WEST
OKEECHOBEE, FL 34974**

**WET WYLLIES
11486 S. E. HWY 441
OKEECHOBEE, FL 34974**

**OKEECHOBEE AIRBOATS RIDES
220 HWY 78
OKEECHOBEE, FL 33974**

**J & S FISH CAMP
9500 S. W. CONNER'S HWY, #15
OKEECHOBEE, FL 34974**

**GARRARD'S BAIT AND TACKLE
4259 HWY 441 SOUTH
OKEECHOBEE, FL 34974**

**BUCKHEAD RIDGE MARINA
OKEECHOBEE, FL 34974**

**TAYLOR CREEK LODGE
2730 S. E. HWY 441
OKEECHOBEE, FL 34974**

**CALOOSA LODGE
RT 2 LOT # 31
LAKE PORT, FL 33471
C/O GREG CLOSE**

**NIX'S FISHING HEADQUARTERS
3235 S. E. HWY 441, SUITE A
OKEECHOBEE, FL 34974**

**CARROLL & LOUISE HEAD
2252 SW 22ND CIRCLE NORTH
OKEECHOBEE, FL 34974-5702**

OTHER

**DAVID SUTTON
UNIVERSITY OF FLORIDA
IFAS RESEARCH CENTER
3205 S. W. COLLEGE AVENUE
FT. LAUDERDALE, FL 33314**

**WARREN BROWN
ROUTE 2 BOX 42
MOORE HAVEN, FL 33471**

**RED ALTMAN
1508 S. E. 6TH STREET
OKEECHOBEE, FL 34974**

**LISA B BEEVER, PH.D.
CHARLOTTE HARBOR NEP
4980 BAYLINE DRIVE
N. FT. MYERS FL 33917-3909**

**RON RAMSEY
404 S. E. 6TH STREET
OKEECHOBEE, FL 34973**

**WILLIAM G WINTERS, MANAGER
LAKE WORTH DRAINAGE DISTRICT
13081 MILITARY TRAIL
DELRAY BEACH FL 33484-1105**

**MIKE BODLE
SOUTH FL. WATER MANAGEMENT DIST
P. O. BOX 24680
WEST PALM BEACH, FL 33419-4680**

**JEFF SCHARDT
FL DEPT OF ENV PROTECT
BUREAU INVASIVE PLANT MGMT
2051 EAST DIRAC DRIVE
TALLAHASSEE, FL 32310**

**TED CENTER
US DEPT OF AGRICULTURE
AQUATIC PLANT LAB
3205 S. W. COLLEGE AVE
FT. LAUDERDALE, FL 33314**

**JIM RODGERS
FL GAME & FRESH WATER FISH COMM
WILDLIFE RESEARCH LAB
4005 S MAIN STREET
GAINESVILLE, FL 32601**

**DAVE EGGEMAN
FL GAME & FRESH WATER FISH
COMMISSION
620 SOUTH MERIDIAN
TALLAHASSEE, FL 32399-1600**

**VERNON VANDIVER
UNIVERSITY OF FLORIDA, AGRI SCIENCES
3205 S.W. COLLEGE AVENUE
FT. LAUDERDALE, FL 33314**

**STEVE SMITH
DUPUIS RESERVE
23500 S. W. KANNER HWY
CANAL POINT, FL 33438**

**HENDRY BOARD OF COUNTY COMM
P. O. BOX 1760
LABELLE, FL 33975**

**VICKI SMITH
OKEECHOBEE BCC
304 N. W. 2ND STREET
OKEECHOBEE, FL 34972**

**JACK RICE
624 S. E. 4TH STREET
BELLE GLADE, FL 33430**

**JACKIE SMITH
FL DEPT OF ENV PROTECTION
BUREAU OF INVASIVE PLANT
MANAGEMENT
311-B13 FORTUNE WAY
WELLINGTON, FL 33414**

**PALM BEACH BOARD CO COMM
301 NORTH OLIVE AVE
WEST PALM BEACH, FL 33401**

**JIM WELLS
1550 SASSY ROAD
CLEWISTON, FL 33440**

**MARTIN CO ADMIN OFFICE
ATTN: BCC
2401 S. E. MONTERAY ROAD
STUART, FL 34994**

**MS SUSAN BROOKMAN, CHAIRMAN
SOUTH FL WATERSHED COUNCIL INC.
P O BOX 61063
FORT MYERS FL 33906-1063**

**BEVERLY JONES
ST. LUCIE INITIATIVE
P.O. BOX 2082
STUART, FL 34995**

**DAVID JONES
EVERGLADES NATIONAL PARK
40001 STATE ROAD 9336
HOMESTEAD, FL 33034-6733**

**OKEECHOBEE BOARD OF COUNTY
COMMISSIONERS
304 NW 2ND ST., RM 106
OKEECHOBEE, FL 34972**

**DONALD STILWELL
LEE COUNTY, COUNTY MANAGER
P.O. BOX 398
FT. MYERS, FL 33902**

**St. Lucie River Initiative
Attn: Kevin Henderson
P.O. Box 2082
Stuart, FL 34995**

**SOUTHWEST FLORIDA REGIONAL PLANNING
COUNCIL
P.O. BOX 3455
NORTH MYERS, FL 33918**

**CENTRAL FLORIDA REGIONAL
PLANNING COUNCIL
P.O. DRAWER 2089
BARTOW, FL 33830**

**SOUTH FLORIDA REGIONAL
PLANNING COUNCIL
3440 HOLLYWOOD BLVD. SUITE 140
HOLLYWOOD, FL 33021**

**SOUTHWEST FLORIDA WATERSHED
COUNCIL
P.O. BOX 61063
FORT MYERS, FLORIDA 33906**

**BONNIE DEARBORN
TREASURE COAST REGIONAL PLANNING
COUNCIL
301 EAST OCEAN BLVD, SUITE 300
STUART, FL 34994**

**DR. PATRICK J. GLEASON
CAMP DRESER & MCKEE, INC
1601 BELVEDERE ROAD
SUITE 211-SOUTH
WEST PALM BEACH, FL 33406**

**Fort Myers-Lee County Public Library
2050 Central Ave.
Fort Myers, Florida 33901**

**Clewiston Public Library
120 W. Osceola Ave.
Clewiston, Florida 33440**

**Palm Beach County Library
3650 Summit Blvd.
West Palm Beach, Florida 33406**

**Okeechobee County Public Library
206 S.W. 16th Street
Okeechobee, Florida 34974**

**Martin County Blake Library
2351 S.E. Monterey Rd.
Stuart, Florida 34996**

**MR. CHARLES ALLER
FLA DEPT OF AG & CONSUMER SVCS
THE CAPITAL, PL10
TALLAHASSEE, FL 32399-0810**

Charlotte Harbor NEP
4980 Bayline Drive, 4th floor
North Fort Myers, FL 33917-3909

Ed Fielding
103 SW Linden Street
Stuart, FL 34997-6332

Joe Collins
Lykes Bros. Inc.
106 S.W. CR 721
Okeechobee, FL 34974

United Waterfowlers – Florida
P.O. Box 550801
Jacksonville, FL 32255



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

TO WHOM IT MAY CONCERN:

Pursuant to the National Environmental Policy Act and U.S. Army Corps of Engineers Regulation (33 CFR 230.11), this letter constitutes the Notice of Availability of the Finding of No Significant Impact (FONSI) for a temporary deviation from the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida.

The purpose of the temporary deviation is to improve the Lake Okeechobee regulation schedule performance by adjusting the classification limits for the hydrologic conditions and outlooks. For your review and comment, please find enclosed a copy of the Draft Environmental Assessment (EA) and Preliminary FONSI. The EA and FONSI is also available for viewing on the U.S. Army Corps of Engineers website under Hendry, Glades, Lee, Martin, Palm Beach or Okeechobee Counties, "Lake Okeechobee Regulation Schedule, Temporary Deviation EA/FONSI" at <http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>.

Comments or questions concerning the EA that led to the FONSI should be directed to Ms. Yvonne Haberer, Planning Division, Environmental Branch, at the letterhead address, or telephone 904-232-1701, or fax 904-232-3442, within 30 days of receipt of this letter.

Sincerely,

A handwritten signature in black ink, reading "James C. Duck", is positioned above the typed name.

James C. Duck
Chief, Planning Division

Enclosure



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

TO WHOM IT MAY CONCERN:

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The purpose of the temporary deviation is to improve the WSE Regulation Schedule performance by adjusting the classification limits for the hydrologic conditions and outlooks. A copy of the Environmental Assessment (EA) and FONSI is available for viewing on the U.S. Army Corps of Engineers website under Hendry, Glades, Lee, Martin, Palm Beach or Okeechobee Counties, "Lake Okeechobee Regulation Schedule, Temporary Deviation EA/FONSI" at <http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>. Additionally, a copy of the EA and FONSI is available at the following libraries:

Fort Myers-Lee County Public Library
2050 Central Ave.
Fort Myers, Florida 33901
Phone: 239-479-4635

Clewiston Public Library
120 W. Osceola Ave.
Clewiston, Florida 33440
Phone: 863-983-1493

Okeechobee County Public Library
206 S.W. 16th Street
Okeechobee, Florida 34974
Phone: 863-763-3536

Martin County Blake Library
2351 S.E. Monterey Rd.
Stuart, Florida 34996
Phone: 772-288-5702

Palm Beach County Library
3650 Summit Blvd.
West Palm Beach, Florida 33406
Phone: 561-233-2600

Comments or questions concerning the EA that led to the FONSI should be directed to Ms. Yvonne Haberer, Planning Division, Environmental Branch, at the letterhead address, or telephone 904-232-1701, or fax 904-232-3442, within 30 days of receipt of this letter.

Sincerely,

James C. Duck
Chief, Planning Division



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Palm Beach County Library
3650 Summit Blvd.
West Palm Beach, Florida 33406-4198

Dear Sir/Madam:

Enclosed is a copy of the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a temporary deviation to the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida. This copy is being provided for public review pursuant to the National Environmental Policy Act. Please make this copy available in the reference section of your library.

Thank you for your assistance. If you have any questions, please contact Ms. Yvonne Haberer at 904-232-1701.

Sincerely,

A handwritten signature in black ink, reading "James C. Duck", is positioned above the typed name.

James C. Duck
Chief, Planning Division

Enclosure



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Martin County Blake Library
2351 S.E. Monterey Road
Stuart, Florida 34996

Dear Sir/Madam:

Enclosed is a copy of the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a temporary deviation to the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida. This copy is being provided for public review pursuant to the National Environmental Policy Act. Please make this copy available in the reference section of your library.

Thank you for your assistance. If you have any questions, please contact Ms. Yvonne Haberer at 904-232-1701.

Sincerely,

A handwritten signature in black ink, reading "James C. Duck", is positioned above the typed name.

James C. Duck
Chief, Planning Division

Enclosure



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Okeechobee County Public Library
206 S.W. 16th Street
Okeechobee, Florida 34974

Dear Sir/Madam:

Enclosed is a copy of the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a temporary deviation to the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida. This copy is being provided for public review pursuant to the National Environmental Policy Act. Please make this copy available in the reference section of your library.

Thank you for your assistance. If you have any questions, please contact Ms. Yvonne Haberer at 904-232-1701.

Sincerely,

A handwritten signature in black ink, reading "James C. Duck", is positioned above the typed name.

James C. Duck
Chief, Planning Division

Enclosure



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Clewiston Public Library
120 W. Osceola Avenue
Clewiston, Florida 33440

Dear Mr. Kuechman:

Enclosed is a copy of the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a temporary deviation to the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida. This copy is being provided for public review pursuant to the National Environmental Policy Act. Please make this copy available in the reference section of your library.

Thank you for your assistance. If you have any questions, please contact Ms. Yvonne Haberer at 904-232-1701.

Sincerely,

A handwritten signature in black ink, reading "James C. Duck", is positioned above the typed name.

James C. Duck
Chief, Planning Division

Enclosure



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Fort Myers-Lee County Public Library
2050 Central Avenue
Fort Myers, Florida 33901

Dear Sir/Madam:

Enclosed is a copy of the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a temporary deviation to the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida. This copy is being provided for public review pursuant to the National Environmental Policy Act. Please make this copy available in the reference section of your library.

Thank you for your assistance. If you have any questions, please contact Ms. Yvonne Haberer at 904-232-1701.

Sincerely,

A handwritten signature in black ink, reading "James C. Duck", is positioned above the typed name.

James C. Duck
Chief, Planning Division

Enclosure



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Attention: Mr. Bob Hall
Tallahassee, Florida 32399-3000

Dear Mr. Hall:

Pursuant to the National Environmental Policy Act, The U.S. Army Corps of Engineers (Corps) has prepared an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the temporary deviation from the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, Florida.

The proposed action as described in the EA would improve the Lake Okeechobee Regulation Schedule performance by adjusting the classification limits for the hydrologic conditions and outlooks. The EA discusses the details of the proposed action.

For your distribution, you will find enclosed 16 copies of the EA. Comments or questions concerning the Environmental Assessment (EA) should be directed to Ms. Yvonne Haberer at the letterhead address or telephone 904-232-1701 or fax 904-232-3442 within 30 days of receipt of this letter.

Sincerely,

James C. Duck
Chief, Planning Division

Enclosures

FLORIDA STATE CLEARINGHOUSE
FL DEPT OF ENV PROTECTION
ATTN: Bob Hall
3900 COMMONWEALTH BLVD
MAIL STATION 47
TALLAHASSEE FL 32399-3000 (16CY)

Ref: DOCUMENTS
Dept: PD

Date: 10SEP04	SHIPPING	\$21.19
Wgt: 21.3 LBS	SPECIAL	\$0.00
	HANDLING	\$0.00
	TOTAL	\$21.19

SERVICE: PRIORITY OVERNIGHT
TRACK: 6594 9399 9121



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

SEP 10 2004

Planning Division
Environmental Branch

Mr. Miles M. Croom
Assistant Regional Administrator
Southeast Regional Office
Habitat Conservation Division
9721 Executive Center Drive North
St. Petersburg, Florida 33702-2432

Dear Mr. Croom:

Pursuant to the National Environmental Policy Act (NEPA), enclosed for your review and comment is a copy of the Draft Environmental Assessment (EA) and preliminary Finding of No Significant Impact (FONSI) for the proposed temporary deviation from the Regulation Schedule, Water Supply/Environment (WSE) for Lake Okeechobee, Florida.

The EA also constitutes our Essential Fish Habitat (EFH) Assessment as required by the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). With this letter, we are initiating EFH consultation with your agency. The proposed action is completely operational and does not require any structural or construction activities. A description of the proposed action and an analysis of the effects on EFH and managed species can be found in the EA. Based on the results of the EA, the U.S. Army Corps of Engineers has determined that this action will not adversely affect EFH or the species managed by the Fisheries Management Councils.

We request your comments pursuant to NEPA and MSFCMA within 30 days of receipt of this letter. If you have any questions or need further information, please contact Ms. Yvonne Haberer at the letterhead address, or by telephone at 904-232-1701.

Sincerely,

James C. Duck
Chief, Planning Division

Enclosure

Copy Furnished (w/encl):

National Marine Fisheries Service, (Attn: Ms. Audra Livergood), 11420 North
Kendall Drive, Suite #103, Miami, Florida 33176



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 10 2004

Mr. Jay Slack
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Slack:

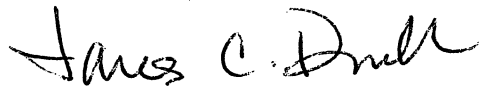
In accordance with the provisions of Section 7 of the Endangered Species Act, as amended, the following information is provided concerning the proposed temporary deviation to the Water Supply/Environment (WSE) Regulation Schedule for Lake Okeechobee.

As part of recent efforts to improve the performance of the WSE, several alternative regulation schedule modifications were developed and analyzed. Of the alternatives that were developed, one referred to as the Class Limit Adjustment (CLA) was selected for detailed evaluation. The CLA is basically a fine-tuning of some of the schedule parameters to improve the performance of the regulation schedule. Modeling simulations indicate that the CLA will improve ecological conditions in Lake Okeechobee. CLA simulations do not indicate significant changes overall to the ecology of the St. Lucie and Caloosahatchee estuaries or to the Water Conservation Areas. The temporary deviation is a minor adjustment to the WSE and does not significantly change the balance of the performance of the multiple lake management objectives. The basis and details of the CLA alternative, and a summary of the simulated and expected performance compared to the unadjusted regulation schedule, can be found in the enclosed Environmental Assessment (EA).

Based on the results of the EA, The U.S. Army Corps of Engineers (Corps) has determined that the proposed action will not adversely affect listed threatened or endangered species or result in destruction or adverse modification of designated critical habitat under your jurisdiction. Additionally, the Corps believes that the action will not adversely impact fish and wildlife resources. The Fish and Wildlife Coordination Act Report prepared by your office in October 1999 for the WSE study adequately addresses fish and wildlife resources for this action.

For your review and comment is the Draft EA with a Preliminary Finding of No Significant Impact (FONSI). The EA/FONSI is currently circulating for public review with a 30 day comment period. Comments or questions concerning the EA that led to the FONSI should be directed to Ms. Yvonne Haberer at the letterhead address, or telephone 904-232-1701.

Sincerely,

A handwritten signature in dark ink, appearing to read "James C. Duck". The signature is fluid and cursive, with the first name "James" being more prominent than the last name "Duck".

James C. Duck
Chief, Planning Division

Enclosure



United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960



November 1, 2004

James C. Duck
Chief, Planning Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Duck:

The Fish and Wildlife Service (Service) has prepared the following comments on your "Draft Environmental Assessment (EA) for Lake Okeechobee Regulation Schedule, Water Supply and Environment (WSE), Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts." We sent an earlier version of these comments via electronic mail to Yvonne Haberer on October 13, 2004. This letter is a slightly revised version of those comments.

Introduction

The Service has a long history in reviewing proposals to modify regulation schedules for Lake Okeechobee. The intent of the current proposal is to slightly adjust the classification of tributary conditions and climate outlook to allow more frequent Level 1 pulse releases to the St. Lucie and Caloosahatchee estuaries when the lake is in Zone D of the regulation schedule (Class Limit Adjustments [CLA]). We have attended several public meetings explaining the intent of this proposed change and the results of models projecting the potential effects.

We find that, given the present infrastructure around the lake, water managers are unable to avert the most extreme high and low water conditions that cause significant ecological harm. The slight changes proposed here to the existing WSE schedule can only affect decisions under the moderate conditions of Zone D, and decisions of this type have small effects on the tradeoff of relative improvements to the ecology of the lake's littoral zone, conditions in the estuaries, the Everglades, and water supply. Although we agree that the changes are slight, we believe that the public disclosure in the EA would be more accurate if the U.S. Army Corps of Engineers (Corps) acknowledged that the proposed changes would "nudge" the balance of these tradeoffs in the direction of slightly improved conditions in the lake's littoral zone, while providing slightly less favorable conditions in the estuaries, particularly the Caloosahatchee.

General Comments on Effects to the Estuaries

Overall, this document downplays the effects that increased high flow will have on the Caloosahatchee and St. Lucie estuaries. Some parts of the EA state that the CLA "...reduces the



occurrences of high damaging estuary flows..." when the data shown in the accompanying tables dispute this statement. The performance measures that have been developed by Restoration Coordination and Verification (RECOVER) for the estuaries have flow categorized as "low," "normal," "high," and "very high." The "high" flows are defined as being stressful to the estuarine communities, and the "very high" flows are damaging to these communities. This EA refers to the RECOVER "high" flow as "moderate" flow, and to the RECOVER "very high" flow as "high" flow, thereby reducing the apparent effect that the CLA will have on flows to the estuaries.

The performance measures have four categories of "high flows," two for St. Lucie and two for Caloosahatchee. Of these four measures, the performances of three of them are worsened with the CLA scenario (one for St. Lucie and both for Caloosahatchee). Yet the EA states that "The CLA improves the likelihood of making smaller releases more often, as opposed to stressful high damaging estuary releases." This statement seems intuitive, yet is not borne out by the modeling results.

In several places, the EA states that the pulse releases will only be done after consulting estuarine experts, so that potential high releases will not negatively affect the estuaries. Is this consultation with experts required in any decision-making documentation? It seems that this consultation is not afforded the same level of diligence as the rest of the decision-making process. The decision tree is explicit in its requirements for making releases, with several mathematical and meteorological tests to determine when and how much water may be released. We believe it would be appropriate to add a note in the officially accepted decision tree regarding the requirement to consult with estuarine experts.

General Comments on Effects to Lake Okeechobee

The South Florida Water Management District (District) has ongoing monitoring programs in the lake's littoral zone. We inquire if modifications or additions are needed to these monitoring efforts to assess the effects of the class limit adjustments on lake ecology. Improved performance assessment methods will be necessary to gauge the effects of the class limits adjustments and to continue through the next phase of regulation schedule modification.

Summary

We believe the EA would be much more effective if it more clearly explained how the predicted increased high flows to the estuaries will not significantly worsen adverse effects. Because the Service has participated in several meetings explaining the intent of this modification and the interpretation of its consequences, we are in a better position to understand than a person just reading the document. We believe the public would benefit from a better explanation in the EA of how the analysis led to your conclusion.

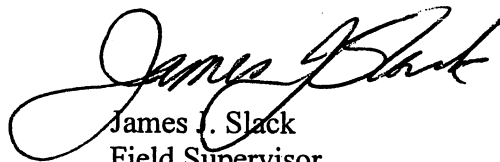
Considering the potential benefits that the CLA will likely have on the lake's littoral zone, and the possibly minor increase in the number of high-flow events to the estuaries (approximately

10 percent predicted increase in moderately high and extremely high flows to the Caloosahatchee estuary), it appears that the tradeoff between the two will be beneficial to the overall system. Given this, the Service can support the decision to modify the regulation schedule with the CLA alternative.

We recommend that once the CLA is put in effect, the Corps and the District should keep an account of the times when discharges to the estuaries were reduced below the maximum amount allowable in the schedule due to consultation with experts on estuarine ecology. The reasons for the reduction (for example, concern about protecting oyster spawning) should also be documented.

We look forward to our continued participation in improving the regulation schedule for Lake Okeechobee. Any additional questions regarding this matter should be directed to Doug Chaltry at 772-562-3909, extension 320.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James J. Slack". The signature is fluid and cursive, with the first name "James" being the most prominent.

James J. Slack
Field Supervisor
South Florida Ecological Services Office

cc:

Corps, Jacksonville, Florida (Yvonne Haberer)
District, West Palm Beach, Florida (Susan Grey)
Service, Atlanta, Georgia (Dave Horning)
Service, Jacksonville, Florida (Miles Meyer)



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

DEC 02 2004

Mr. Jay Slack
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Slack:

Thank you for your recent comments by letter dated November 1, 2004 on the "Draft Environmental Assessment (EA) for Lake Okeechobee Regulation Schedule, Water Supply and Environment (WSE), Temporary Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts" dated August 2004.

Your letter contains general comments on the EA, effects to the estuaries, and effects to Lake Okeechobee. The letter further states your agency's support for implementation of the Class Limit Adjustment (CLA) alternative, considering the potential benefits that the CLA will likely have on the lake's littoral zone. However, there is no discussion about endangered or threatened species under your jurisdiction or our effect determination, which was provided by letter, dated September 10, 2004.

As stated in the EA, Section 3.3, endangered and threatened species known to occur within the action area include the wood stork, manatee, bald eagle, Everglades snail kite, and the Okeechobee gourd. Section 4.3.1 of the EA concluded that the CLA would not adversely impact these species. This determination was based partly on the fact that the U.S. Fish and Wildlife Service concluded during coordination of the WSE in 1999, that the WSE regulation schedule was expected to improve habitat conditions and would likely benefit the Okeechobee gourd, bald eagle, wood stork, and the Everglades snail kite in the vicinity of Lake Okeechobee. The proposed action (CLA) is an adjustment to WSE, which could achieve lower lake stages that would benefit the lake's littoral zone and species utilizing this habitat. Therefore, implementation of the CLA would be beneficial to these same species, since the CLA is an improvement to the WSE.

To further support our effect determination on federally endangered and threatened species, we have enclosed a more detailed discussion on the Everglades snail kite, wood stork, bald eagle, Okeechobee gourd, and manatee. We have also added discussions regarding the Eastern indigo snake and Cape Sable seaside sparrow.

Based on the information contained in our previous letter, the EA and the enclosed information, the U.S. Army Corps of Engineers (Corps) has determined that the proposed action will have "no effect" on the Cape Sable seaside sparrow, manatee or Eastern indigo snake. This

action is "not likely to adversely affect" the Everglades snail kite, bald eagle, wood stork, or Okeechobee gourd, or result in destruction or adverse modification of designated critical habitat under your jurisdiction. Implementation of this temporary deviation could begin as early as January 2005. As such, we are requesting your concurrence with our determination by January, as we do not want to impact this schedule.

It is important to add that the Corps realizes that the CLA is only a minor adjustment to the WSE schedule. However, it is a movement in the right direction for improving conditions to the lake's littoral zone until a more thorough review and study can be accomplished. It is expected that the next phase (referred to as Phase 4) of the Lake Okeechobee Regulation Schedule study will begin in 2005. During that time a more extensive consultation process with your office would take place.

If you have any questions or need additional information please contact Ms. Yvonne Haberer, of my staff, at 904-232-1701.

Sincerely,

A handwritten signature in cursive script, appearing to read "JP Duck, for".

James C. Duck
Chief, Planning Division

Enclosure

**DISCUSSION ON ENDANGERED AND THREATENED SPECIES
LAKE OKEECHOBEE REGULATION SCHEDULE
TEMPORARY DEVIATION TO ADJUST CLASSIFICATIONS OF HYDROLOGIC
INDICATORS AND FORECASTS**

LISTED SPECIES WHICH MAY BE AFFECTED:

Endangered and threatened species known to occur within the project area include:

COMMON NAME	SCIENTIFIC NAME	STATUS
Everglades snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E(CH)
Wood stork	<i>Mycteria americana</i>	E
West Indian manatee	<i>Trichechus manatus</i>	E(CH)
Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T
Okeechobee gourd	<i>Cucurbita okeechobeensis</i>	E
Cape Sable seaside sparrow	<i>Ammodramus (=Ammospiza) maritimus mirabilis</i>	E

E=Endangered; T=Threatened; CH=Critical Habitat has been designated

DISCUSSION OF POTENTIAL IMPACTS TO LISTED SPECIES:

Everglades Snail Kite

Lake Okeechobee and surrounding wetlands are major nesting and foraging habitat, particularly the large marsh in the southwestern portion of the lake and the area southwest of the inflow of the Kissimmee River (USFWS, 1999b). The entire littoral zone and western shore of Lake Okeechobee are designated as critical habitat for the snail kite. Snail kites require foraging areas that are relatively clear and open in order to visually search for apple snails (USFWS, 1999b). Apple snails (*Pomacea paludosa*) are the main diet for the Florida population of snail kites. For a complete species description, taxonomy, distribution, habitat requirement, management objectives, and current recovery status, reference the South Florida Multi-Species Recovery Plan (USFWS, 1999b).

The snail kite is sensitive to the ecological health of Lake Okeechobee's littoral zone. It is expected that the CLA will improve conditions in the lake's littoral zone, resulting in benefits to habitat conditions needed for the snail kite. As such, implementation of the CLA would not adversely impact the Everglades snail kite or adversely affect the designated critical habitat of this species. When compared to the WSE, the CLA would be more beneficial to habitat conditions in the littoral zone.

Wood Stork

The USFWS and the Florida Fish and Wildlife Conservation Commission (FFWCC) list the wood stork as an endangered. Wood storks forage in freshwater marshes, seasonally flooded roadside or agriculture ditches, narrow tidal creeks, shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs.

The potential improvement to conditions of the lake's littoral zone should benefit a variety of wading birds, including the wood stork. This alternative would not adversely affect the wood stork.

West Indian manatee

The West Indian manatee has been recognized as an endangered species since 1967. Manatees are found throughout the waterways in south Florida, and frequently are found in Lake Okeechobee and the Okeechobee Waterway. Manatees feed on a variety of submergent, emergent and floating vegetation and usually forage in shallow grass beds adjacent to deeper channels (USACE, 2000).

There would be no adverse effect on habitat conditions for the manatee as a result of this action. As such, there would be no effect to this species.

Bald Eagle

Shorelines provide fishing and loafing perches, nest trees, and open flight paths for the bald eagle (USFWS, 1999b). Specifically, the shorelines around Lake Okeechobee, the Okeechobee Waterway, and estuaries are known habitat for the bald eagle. Bald eagles are known to nest around the study area. The eagle is an opportunistic species, but primarily feeds on fish (USFWS, 1999b).

The potential improvement to conditions of the lake's littoral zone, may result in enhanced productivity of fish in the lake. Foraging conditions may be slightly improved for the eagle. This action would have little to no effect to the shorelines of the estuaries. As such, this action would not adversely affect the bald eagle.

Eastern Indigo Snake

The eastern indigo snake is a large, black, non-venomous snake and occurs throughout the study area. This species is generally an upland species snake, occupying a wide variety of habitat.

The action will have no effect on the indigo snake, which primarily inhabits upland. The project does not include any changes to the water regulation infrastructure around the lake, such as the Herbert Hoover Dike, where the snake may be found.

Cape Sable seaside sparrow

Presently, the known distribution of the sparrow is restricted to two areas on the east and west sides of Shark River Slough and Taylor Slough in Everglades National Park (USACE, 2000). The Cape Sable seaside sparrow is highly sensitive to seasonal water level changes in the Everglades, and has been adversely impacted in the past. However, this species is far removed from Lake Okeechobee and not subject to any direct discharges from the lake.

Although CLA is expected to increase the opportunities for sending water to the WCAs and the Estuaries, the model simulations show there is a reduction in time that regulatory releases are made to the WCAs with CLA –that reduction translates to a

reduction in volume of water sent south. As such, this action would have no effect to the Cape Sable seaside sparrow or its critical habitat to the south.

Okeechobee Gourd

There are several localized sites along the southeastern shore of Lake Okeechobee, where this vine plant is found. Fluctuating lake levels are necessary for the continued survival and recovery of the gourd within and around Lake Okeechobee.

The CLA action moderately improves conditions along the shorelines. As such, there would be a potential benefit to listed species, such as the Okeechobee Gourd, where a lower lake stage is crucial for its survival. There would be a slight benefit to this species.

EFFORTS TO ELIMINATE POTENTIAL IMPACTS ON LISTED SPECIES:

The CLA is expected to achieve stages that are more beneficial to the bald eagle, wood stork, Everglades snail kite and the Okeechobee gourd. The CLA is a fine-tuning of the internal components of WSE that represents an overall improvement to the function of WSE. The change is minimal but it is expected to increase operational flexibility and overall performance. It will likely be utilized until a full regulation schedule review, which may include new components of the Comprehensive Everglades Restoration Project, is completed through a more formal review process. Implementation of the CLA is a move in the right direction for reducing potential impacts on listed species.

EFFECT DETERMINATION: The U.S. Army Corps of Engineers has determined that the proposed action would have no effect on the Eastern indigo snake, manatee or Cape Sable seaside sparrow. The proposed action is not likely to adversely affect the bald eagle, wood stork, Everglades snail kite or the Okeechobee gourd.

REFERENCES

U.S. Fish and Wildlife Service. 1999a. Fish and Wildlife Coordination Act Report on the Lake Okeechobee Regulation Schedule. October 1999. South Florida Restoration Office; Vero Beach, Florida.

U.S. Fish and Wildlife Service. 1999b. South Florida Multi-Species Recovery Plan. USFWS Southeast Region.

U.S. Army Corps of Engineers. 2000. Lake Okeechobee Regulation Schedule Study, Environmental Impact Statement. Jacksonville District; Jacksonville, Florida.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960



January 20, 2005

James C. Duck
Chief, Planning Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Log Number: 4-1-05-CERP-10268
Project: Lake Okeechobee
Regulation Schedule

Dear Mr. Duck:

Thank you for your letter dated December 2, 2004, regarding the proposed Class Limit Adjustment (CLA) to the current Water Supply and Environmental (WSE) regulation schedule for Lake Okeechobee. You are proposing this adjustment to give water managers the ability to fine-tune their regulatory releases to the St. Lucie Canal (C-44) and the Caloosahatchee River (C-43) when such releases are directed by the WSE schedule. This letter is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*).

The intention of the CLA is to increase the frequency of small releases to the C-43 and C-44, thereby theoretically reducing the frequency of larger releases that are more damaging to the Caloosahatchee and St. Lucie estuaries. We believe that the proposed CLA may slightly improve the flexibility of the water release schedule, which would in turn, slightly improve the ecological conditions within Lake Okeechobee's littoral zone relative to the previous WSE schedule.

The Service has a long history in reviewing the regulation schedule for Lake Okeechobee. In 1978, the U.S. Army Corps of Engineers (Corps) formally consulted with the Service on the proposed raising of the lake regulation schedule from the 14.0-16.0 feet mean sea level (msl) range to the 15.5-17.5 feet msl range. The Service issued a biological opinion finding that this change to the schedule was not likely to jeopardize the continued existence of the Everglade snail kite (*Rostrhamus sociabilis plumbeus*), or adversely modify its designated critical habitat within portions of the lake's littoral zone. However, the Service also noted that the regulation schedule was a complex issue with numerous variables, and we recommended that the Corps initiate a monitoring program for apple snail (*Pomacea paludosa*) production and availability after the lake levels were raised. To date, we do not believe that any such monitoring program has been implemented.

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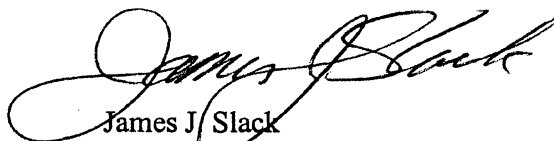
Throughout the 1990s, the Corps and the Service coordinated extensively on several modifications to the regulation schedule, and this coordination culminated in 1999 with an informal consultation on the proposed WSE schedule. Although the Service had reiterated on several prior occasions our preference for a different alternative (called Run 22AZE), we concurred with the Corps' determination that the WSE alternative would not likely adversely affect snail kites (and other listed species). The letter of concurrence included the statement "If modifications are made to the regulation schedule or if additional information involving potential impacts on listed species becomes available, reinitiation of consultation may be necessary."

Service biologists have recently been advised by species experts about the status of the snail kite and its critical habitat in the littoral zone of Lake Okeechobee. Declines in the overall population estimate for the snail kite and the lack of substantial numbers of snail kite nests in Lake Okeechobee in recent years have led to general consensus among these experts that the species is faring poorly compared to its status in 1999. Because the continued operation of the WSE regulation schedule is affecting the kite and/or its critical habitat to a degree that was not recognized during the informal 1999 consultation, the Service recommends that the Corps immediately reinitiate consultation on the Lake Okeechobee water regulation schedule.

Formal consultation on Phase 4 of the Corps' ongoing evaluation of the Lake Okeechobee regulation schedule will provide an opportunity for the Service to help the Corps develop Reasonable and Prudent Measures to reduce incidental take of snail kites and provide conservation recommendations promoting recovery of the species. Because the currently-proposed CLA adjustments are predicted to have a slightly beneficial effect on the snail kite in Lake Okeechobee, the Service believes it would be prudent for the Corps to implement the CLA proposal immediately as an interim conservation measure while we continue into formal consultation on Phase 4 of planning for the regulation schedule.

Thank you for your cooperation in protecting the fish and wildlife resources of south Florida. If you have additional questions on this matter, please call Robert Pace at 772-562-3909, extension 239, or Doug Chaltry at extension 320.

Sincerely yours,



James J. Slack
Field Supervisor
South Florida Ecological Services Office

cc:

District, West Palm Beach, Florida (Susan Gray)
FWC, Vero Beach, Florida (Joe Walsh)
Service, Jacksonville, Florida (Miles Meyer)
Florida Wildlife Federation, Crawfordsville, Florida (Dr. Paul Parks)

**COMMENT LETTERS RECEIVED FROM
DRAFT
ENVIRONMENTAL ASSESSMENT
(dated August 2004)**

<u>FROM</u>	<u>DATE</u>
Florida Fish and Wildlife Conservation Commission	October 14, 2004
Charlotte Harbor National Estuary Program	October 11, 2004
Southwest Florida Watershed Council, Inc.	October 22, 2004
The Conservancy of Southwest Florida	October 12, 2004
St. Lucie River Initiative	October 8, 2004
Sugar Cane Growers Cooperative of Florida	October 5, 2004
Lehtinen Vargas & Riedi (Representing the Miccosukee Tribe of Indians)	October 8, 2004
The Everglades Coalition	October 29, 2004
Audubon of Florida	October 28, 2004
Florida Wildlife Federation	November 3, 2004
Florida Department of Agriculture And Consumer Services	October 28, 2004
South Florida Water Management District	October 15, 2004
Clewiston Chamber of Commerce	November 3, 2004
U.S. Fish and Wildlife Service	November 1, 2004

Continued:

FROM

DATE

Florida Sugar Cane League, Inc.
(Letter prepared by Landers &
Parsons, P.A.)

October 15, 2004

Mr. Robert M. Norton, Ecosystem
Watch, Lake Okeechobee

October, 19, 2004

no response necessary

Florida State Clearinghouse

November 12, 2004

Agencies submitting comments directly to the Clearinghouse are:

Florida Department of Environmental Protection (*response prepared*)

Florida Fish and Wildlife Conservation Commission (*response prepared*)

Florida Department of Transportation (*no response necessary*)

South Florida Water Management District (*response prepared*)

South Florida Regional Planning Council (*response prepared*)

Treasure Coast Regional Planning Council (*no response necessary*)

Florida Department of Agriculture and Consumer Services (*response prepared*)

***THE FOLLOWING RESPONSES ADDRESS SPECIFIC COMMENTS TO THE
PROPOSED ACTION***

**RESPONSE TO:
Florida Fish and Wildlife Conservation Commission**

1. The Environmental Assessment (EA) should clarify the time interval or conditions after which this action would not be implemented. What is the duration of the temporary deviation?

RESPONSE:

The Class Limit Adjustment (CLA) is a fine-tuning of the internal components of the Lake Okeechobee Regulation Schedule, Water Supply and Environment (WSE) that represents an overall improvement to the function of WSE. The change is minimal but it is expected to increase operational flexibility and overall performance. It will likely be utilized until a full regulation schedule review, which may include new components of the Comprehensive Everglades Restoration Plan (CERP), is completed through an Environmental Impact Statement (EIS) process.

2. The Draft EA does not describe the Everglades Water Management Areas (WMAs) nor does it consider the impacts of the proposed action on the Everglades WMAs.

RESPONSE:

Proposed adjustment to WSE does not affect WMAs. Although CLA is expected to increase the opportunities for sending water to the WCAs and the Estuaries, the simulations show there is a reduction in time that regulatory releases are made to the WCAs with CLA –that reduction translates to a reduction in volume of water sent south. There is no change in the operation of the WMAs as a result of CLA.

3. Low volume releases may help avoid emergency releases to the estuaries.

RESPONSE:

That is an objective of CLA, however, it is important to understand in that in a year like 2004 when water levels rise rapidly through Zone D and into the upper regulatory Zones, that the CLA will not help avoid emergency releases.

4. Recommend that the lake levels be managed between 12.0 and 15.5 ft. National Geodetic Vertical Datum (NGVD).

RESPONSE:

The concept of managing Lake Okeechobee between stages of 12.0 and 15.5 ft. was developed by South Florida Water Management District (SFWMD) and U. S. Fish and Wildlife Service (FWS) scientists during the planning process for CERP, in the late 1990s. The basis for this recommendation comes largely from wading bird research conducted by University of Florida scientists between 1989 and 1993, as part of a SFWMD funded study of the lake ecosystem. However, it is widely recognized that this restoration goal cannot be achieved with the present Central & Southern Florida Project (C&SF) infrastructure, but rather, will require completion of an extensive array of aquifer storage and recovery (ASR) wells near the lake, as well as large above-ground regional water storage.

5. Long-term impact of low-level dry season releases is hard to predict. Dry season releases need to be monitored in order to assess their impacts to estuarine species and their habitats.

RESPONSE:

The effects of dry season discharges on estuarine organisms depend on the magnitude of these releases and the supply of water from basin runoff. If the sum of releases and basin runoff is too large larvae that use the estuary as a nursery in late winter-early spring will be washed out or experience salinities that are too low for development to proceed properly. If the sum is too low then salinities may become too high. In the St. Lucie estuary a series of salinity thresholds have been developed based on the requirements of the American Oyster. In the late winter – early spring salinities in the 12 – 24 ppt range at the US 1 Bridge are preferred. This is the optimal range for larval development and the growth and survival of newly settled oysters. In the winter-spring of 2004 releases from Lake Okeechobee were reduced in order to ensure larval settlement and survival.

6. The regulation schedule of the lake will need to be adaptively managed in the future. The WSE regulation schedule will have to be modified as different ecosystem restoration components are introduced to the system.

RESPONSE:

Concur. There is ongoing monitoring that aids in decision-making and this will need to continue especially as CERP components come on line. The next step in Lake Okeechobee Regulation Schedule (LORS) improvements is to consider the CERP facilities that may be constructed within the next 10yrs and develop operating rules that maximize the associated system-wide benefits.

**RESPONSE TO:
Charlotte Harbor National Estuary Program**

7. Given pending issues, it is premature for the Corps to adopt the temporary deviation until alternatives which provide the best water delivery to lakes, estuaries, and consumers can be identified.

RESPONSE:

The CLA is an adjustment that improves the current performance of WSE, provides water managers with increased flexibility, and better balances the over all system.

8. The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee.

RESPONSE:

As compared to the Base case, the CLA alternative increases the number of mean monthly flows in the 2800 – 4500 cfs range by 5, increases the number of flows in the >4500 cfs range by two but reduces the number of flows less than 300 cfs by 7. The number of mean monthly flows in the 300 – 2800 cfs range remained unchanged. The greater number of high flows is potentially damaging to sea grasses in the lower estuary and San Carlos Bay. The fewer number of low flows is beneficial to Tape Grass in the upper estuary. First, consider the fact that the net change between the Base Case and the CLA in 7 months out of a total of 432 month that were modeled: 7 flows < 300 cfs became 7 flows >2800 cfs. This is a small (1.6 %) change. Closer examination of the high flow events shows that these resulted from the way the model was programmed to make pulse releases in Zone D. If the Lake level was in the lower third of Zone D then the model made a level 1 pulse when pulses were required. If the Lake level was in the middle third of Zone D a level 2 pulse was made and if in the upper third a level 3 pulse was made. For example in the cases when flows averaged over 4500 cfs, the model made a series of level 2 and 3 pulses to avoid entering Zone C. While Zone C was avoided, more water was released than necessary. The same result, avoidance of zone C, could have been achieved by a series of level 1 pulses and mean monthly flows would not have exceeded 4500 cfs. Such adjustments could not be made in the model run, but can and are routinely made at the weekly operations meeting when conditions in the estuaries, the level of basin runoff and the weather forecast are considered before a decision on release volume is made.

9. Suggest to incorporate the Fish and Wildlife Conservation Commission's recommendation to manage the between 12.0 feet and 15.5 feet NGVD.

RESPONSE: Refer to response # 4.

RESPONSE TO:
Southwest Florida Watershed Council, Inc.

10. The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee.

RESPONSE: Refer to response # 8.

11. A goal of the cooperation between the U.S. Army Corps of Engineers (Corps) and the South Florida Water Management District should be to establish a WSE schedule that manage Lake Okeechobee between 12 feet and 15.5 feet, per recommendation of the Florida Fish and Wildlife Conservation Commission.

RESPONSE: Refer to response # 4 & # 8.

RESPONSE TO:
The Conservancy of Southwest Florida

12. Suggest managing the lake at a lower level in order to avoid situations where damaging flows are released. Recommend the Florida Fish and Wildlife Conservation Commission's recommended lake level to be managed between 12 feet and 15.5 feet.

RESPONSE: Refer to response # 4.

13. The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee.

RESPONSE: Refer to response # 8.

RESPONSE TO:
St. Lucie River Initiative

14. Although CLA is movement in the right direction, it is so small a movement that its value is negligible. We believe this is due to the flawed Water Supply component of WSE which continues to trump the Environmental component.

RESPONSE:

The goal of the EA was to provide an accurate assessment of the consequences and tradeoffs of alternative management strategies and to propose management changes to the WSE schedule which reflect these consequences and tradeoffs. The South Florida Water Management Model (SFWMM), the best tool for evaluating water management strategies, was used for this analysis and its output is the basis for the evaluations. It is

well calibrated to the irrigation demands especially in the Everglades Agricultural Area (EAA).

15. The CLA will not achieve the minimum safe requirement of keeping Lake Okeechobee at the bottom of Zone D to the extent possible.

RESPONSE:

WSE is a multi-objective trade-off that makes use of existing regional project components. It seeks to balance overall project requirements and is not driven to achieve a particular schedule line. Only with new CERP components will it be possible to have a regulation schedule with such an objective. It is noteworthy, however, that the CLA alternative does increase the opportunity to make releases while in Zone D. Although CLA does not prescribe unconditional releases while in Zone D, it is an improvement to the current WSE schedule.

RESPONSE TO:

Sugar Cane Growers Cooperative of Florida

16. The analysis indicates that the proposed action will result in a change to the WSE schedule that will remain in place indefinitely. In that case the conclusion that water supply will not be affected is incorrect. The analysis shows that the proposal will result in a reduction of almost 200,000 acre-feet of water supply for agriculture in years where agriculture irrigation is already being rationed. The impact of this could be very significant and result in very serious economic impacts to agriculture that are apparent from your assessment but are not captured in your analysis.

RESPONSE:

Regarding the time frame for the change to the WSE schedule, see response to item #1. The assessment of water supply performance is that "Water supply performance of the CLA is not expected to significantly change compared to the base, or no action alternative." Section 4.10. The information presented in Table 4 of the Classification Limits Adjustment Technical Document in Appendix B shows the increases in demands not met and percent of demands not met for the CLA as compared to the base. Item #37 further discusses the significance of the SSM cutbacks and provides a correction to the percent demands not met data in Table 4. The data in Table 4 show 198,000 acre-feet of additional cutbacks under the CLA during the full 36 year simulation period as opposed to the base. This is close to the 200,000 acre-feet cited in the response. However, it is important to be clear that this is the total increase over the 36 years of the simulation. Figure 12 shows the distribution of cutbacks for the 7 water years with the largest cutback volumes and the increased cutbacks with the CLA do not occur in the most severe years. The Sugar Cane Growers Cooperative is correct in pointing out that if 2001 had been included in the period of analysis there would have been additional cutbacks related to the CLA during a severe shortage water year. In fact, about 100,000 of the 198,000 acre feet of the additional cutbacks with the CLA as opposed to the base occur at

the end of calendar 2000 and, as was pointed out by the Cooperative, the Lake was about .2 feet lower on December 31, 2000 in the CLA run as compared to the Base Run.

17. There is no mention of “forward pumps” in your proposal and without them water supply impacts would be extremely severe. Suggestion that any plan that modifies the lake level must include a revised Water Shortage Plan and the installation of pumping facilities so agriculture water requirements could be met even at low lake levels.

RESPONSE:

The issue of a revised supply-side management plan, which is the water shortage operational plan for the Lake Okeechobee Service Area, is presently being addressed by the South Florida Water Management District through the Water Resources Advisory Commission. Forward pumping is also a legitimate issue which may be addressed as part of the revised supply-side management plan and if not then through the Lower East Coast Water Supply Plan.

RESPONSE TO:

**Lehtinen Vargas & Riedi
(Representing the Miccosukee Tribe of Indians)**

18. The impact on the Caloosahatchee Estuary is admittedly unknown and the impact on the water conservation areas, water quality and water supply has not been adequately analyzed.

RESPONSE:

See response to item #8 above for estuaries. An assessment of water supply impacts is presented on page 10 of the Classification Limits Adjustment Technical Document (Appendix B of the EA). Although the EA states that “the adjusted class limits increase the duration of time the decision tree triggers releases to the WCAs from 62% to 75% of the time when the Lake stage is in Zone D,” there was no evidence from the 36-year simulation that this decision tree modification actually produced more flow to the WCA’s. In fact, a more in-depth analysis of the WCA response to CLA, in comparison to the base case (BS1) indicated an annual average flood control release from the Lake to the WCA’s of 97,000 ac-ft for CLA and 118,000 ac-ft for BS1. This is an 18% flow reduction, and as a result, the total loading of TP into the WCA’s is expected to be lower with CLA. Despite this reduced inflow to the WCA’s, an examination of hydroperiod maps that compared CLA to BS1 found some areas in Northern WCA-3A, areas considered too dry and susceptible to peat fires, to have longer hydroperiods with CLA, which is why the EA stated that the Everglades hydroperiod and ecology was “slightly better” with CLA.

19. The “temporary deviation” timeframe is not defined in the EA.

RESPONSE: Refer to response # 1

20. Concerns that the Water Conservation Areas are not adequately addressed in the EA, in particular WCA 3A. The Draft EA does not acknowledge that both the Corps' 404 permit for the Stormwater Treatment Areas (STAs) and the Settlement Agreement of the federal Everglades lawsuit does not allow polluted water to be put into the WCAs with gay abandon, including into the pristine areas in northern WCA 3A. States that there is no water quality analysis of the increased hydroperiod to WCA 3A north, and this type of analysis must be conducted in an EIS.

RESPONSE:

Total mean annual structure flows, including flood control releases, to the entire Everglades Protection Area for the period 1965 to 2000 was estimated (i.e., simulated) and found to be 1,431,000 ac-ft for BS1 and 1,411,000 ac-ft for CLA. The CLA flow is probably less than the base case because triggers that send water to the estuaries occurs before the WCA Regulation Schedule allows Lake Okeechobee water to go south. A closer examination of S7 and S8 outflows, indicative of flood control releases through STA 3/4, revealed the same trend. Mean annual structure discharge for S7 and S8 combined was 692,307 ac-ft for BS1 and 676,597 ac-ft for CLA. This means that every year the base case puts an "additional" 15,710 ac-ft of water into WCA-3A. If it is assumed that STA 3/4 can treat this Lake Okeechobee inflows down to a Total Phosphorus (TP) concentration of 21 ppb (current STA 3/4 outflow is 15 ppb), then CLA may reduce the amount of TP to the Everglades, on average, by 4,069 metric tons per year.

21. The Corps will violate NEPA if it fails to complete an EIS before implementing the CLA.

RESPONSE:

Selection of the NEPA document depends on many factors as defined in the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508) and the U.S. Army Corps of Engineers regulations (33 CFR 230 and 33 CFR 325). These regulations contain explicit lists of actions that define when to do an EA or an EIS. The regulations were adhered to for this action.

22. The Draft EA does not contain an adequate scientific analysis of the potential impacts to living resources, including mangroves, seagrasses, living bottom communities and the marine/estuarine water column in the Caloosahatchee and St. Lucie Estuaries.

RESPONSE:

Refer to Sections 4.2, Vegetation; 4.4, Fish and Wildlife Resources; 4.5, Essential Fish Habitat. These sections discuss in detail the affect the proposed action would have on living resources in the estuaries. The flow performance measures that were used for the Caloosahatchee are based on the response of the following groups to the range of discharge historically recorded at S-79: zooplankton, fish larvae, shell fish larvae, oysters, seagrass, tape grass, and various species of fish. The flow performance measures

used for the St. Lucie Estuary are based on the requirements of the American Oyster which is used as an indicator of the health of that system. This action was fully coordinated with the National Marine Fisheries Service in accordance with the Magnuson-Stevens Fishery Conservation and Management Act of 1976 and the 1996 Sustainable Fisheries Act by letter dated September 10, 2004 (refer to letter in Pertinent Correspondence section of EA).

23. The Draft EA contains no environmental analysis of the impacts that extending the frequency and duration of water releases to the WCAs will have on flora and fauna there, including tree islands.

RESPONSE:

This Draft EA did not show any hydrologic data from the WCA's because there did not appear to be much of a frequency, duration, or depth difference between CLA and BS1. See response to item # 18 and # 20.

24. Using only modeling simulations, rather than scientific data and analysis, to reach conclusions regarding impacts that the CLA will have on the human environment does not comply with NEPA.

RESPONSE:

Even though Office of Modeling SFWMM simulation results were used as a comparison to the baseline, or WSE, scientific data were reviewed and scientific consultation was achieved to reach conclusions regarding the environmental effects of the proposed action.

25. States that all reasonable alternatives, including Modified Water Deliveries Project, must be analyzed before implementing the proposed change to the WSE Regulation Schedule.

RESPONSE:

The proposed action is to adjust classifications of hydrologic indicators and forecasts. This is not a "major" action requiring a full array of alternatives to analyze. The Modified Water Deliveries Project is beyond the scope of analysis for this action.

26. States that potential water supply impacts not adequately addressed in the EA.

RESPONSE:

An assessment of water supply impacts is presented on page 10 of the Classification Limits Adjustment Technical Document (Appendix B of the EA). It specifically addresses concerns both for the Lake Service Area and for the LEC Coastal Basins. The extent to which the CLA might be expected to increase water shortages and water restrictions is presented in Tables 4 and 5. See additional discussion under comments #16 and #36.

27. Suggests analyzing the potential impacts of CLA coupled with the IOP on the structural integrity of the structures and levees in the WCAs and the public and safety should a hurricane hit.

RESPONSE:

This is beyond the scope of our analyses.

28. The Draft EA fails to analyze cumulative impacts of the proposed action.

RESPONSE:

The action proposes no significant impact on the environment individually or cumulatively.

**RESPONSE TO:
The Everglades Coalition**

29. Suggest that the Corps undertake an EIS process, which can fully address the many problems of WSE.

RESPONSE:

The CLA is an adjustment to the WSE until a more thorough evaluation of the schedule can be accomplished.

30. Suggest that the CLA modifications should include more flexibility in the decision tree to allow for proactive releases. The decision tree should also enable staff to take into account environmental conditions in the system, so that operations can have real time decisions. Include the Adaptive Protocols that the Coalition previously supported that could further this type of adaptive management.

RESPONSE:

CLA does increase the flexibility to make proactive releases. The EA shows that CLA significantly increases the percent of time the decision trees lead to releases. Simulation modeling shows the lake stages are lower due to the increase in proactive Zone D pulse releases. Staff of the South Florida Water Management District and U.S. Army Corps of Engineers meet/discuss weekly or more frequently if necessary, to review meteorological, climatic, hydrologic, and environmental conditions of the systems relevant to Lake Okeechobee operations. The status of many of the performance measures described in the Adaptive Protocols document are reviewed at these weekly meetings. Subsequent release recommendations and decisions carefully consider environmental conditions.

31. The needs of the Caloosahatchee River should be more adequately addressed by the proposed EA. The estuary should not be allowed to suffer MFL violations during times when no other user is being rationed.

RESPONSE:

Strategies for providing water to the Caloosahatchee River during times when there are concerns about MFL exceedences are addressed in the South Florida Water Management

District's "Adaptive Protocols" document. This environmental water delivery is not part of the WSE regulation schedule.

**RESPONSE TO:
Audubon of Florida**

32. The EA states on page 14 that the CLA is "a minor fine-tuning adjustment" to WSE. We concur with that assessment and note that with the CLA, Lake Okeechobee still tends to stay harmfully deep. This is a negligible improvement over WSE, which averages about 0.95 feet from desirable levels (less than an inch difference).

RESPONSE:

The CLA is an adjustment that would improve the current performance of WSE and better balance the over all system until a full regulation schedule review can be accomplished.

33. The threatened and endangered species section of the EA should be greatly expanded, in particular snail kite discussion.

RESPONSE:

The final EA includes a more complete discussion of endangered and threatened species, in particular on the Everglades snail kite. The final EA includes USFWS consultation correspondence and revisions to Sections 3.3 and 4.3.

34. Appendix B of the EA has 4 recommendations (page 14) that could further improve performance of WSE and Audubon recommends the Corps adopt them as part of the CLA deviation.

RESPONSE:

The four recommendations were not part of the environmental analysis of the EA. Further environmental analysis would be required before the recommendations could be implemented.

**RESPONSE TO:
Florida Wildlife Federation**

35. The Corps choice to continue the deep-water storage of the Operations Schedules creates an unnecessary imbalance in management for Project Purposes. The model used for CLA is biased toward a very high level of storage.

RESPONSE:

The WSE schedule reflects a careful balancing of goals and the proposed CLA is a fine tuning of the internal components of WSE that represents an overall improvement to the function of WSE. It is recognized through its comments that the Florida Wildlife

Federation believes that the WSE schedule “creates an unnecessary imbalance in management for Project Purposes.” and that these result from “computer simulated projections of water supply demand.” The South Florida Water Management Model (the SFWMM), the best tool for evaluating water management strategies, was used for this analysis and its output is the basis for the evaluations. It is well calibrated to the irrigation demands especially in the Everglades Agricultural Area. Performance measures related to LOSA water supply were developed and utilized in the Restudy and in the Lower East Coast Water Supply Plan. These performance measures formed the basis of the water supply evaluations of adjustments to the WSE schedule.

RESPONSE TO:
Florida Department of Agriculture & Consumer Services

36. The draft EA does not contain sufficient information to make the determination that there would be “no significant impact” to either agriculture water supply or the ability of the stormwater treatment areas (STAs) to meet the requirements of the Settlement Agreement.

RESPONSE:

This part of the response deals with agricultural water supply. The Florida Department of Agriculture & Consumer Services is correct that the EA provides only a summary of the information regarding water supply performance in the Lake Okeechobee Service Area. The summary information, as presented in Table 4, is, however, assesses both the overall long-term impacts and the impacts during the most severe droughts. The overall long-term impacts are measured by the “Additional SSM cutbacks over the Base” and by the percentages of Demands not met for the EAA and “Other LOSA”. The measure of “water years with SSM cutbacks>100,000 af” was used in the Lower East Coast Water Supply Plan (LECWSP) to identify years with significant shortages. “Water Yrs with SSM cutbacks >350,000af” was used as a breakpoint in this analysis for identifying a more severe class of cutbacks. In the LECWSP cutbacks over 300,000 were considered to be high and those over 400,000 acre-feet as likely to cause significant crop losses. The overall picture this presents is that the CLA slightly increases the cutback volumes and percent of demands not met but does not increase the years with significant cutbacks or the most severe class of cutbacks as evaluated in the LECWSP. This pattern is further reinforced by inspection of Figure 12.

It has been pointed out that the data in Table 4 contain an error in that the % of Demands not Met for the CLA have been switched. The correct result is 9% for the EAA and 7% for Other LOSA. This information was correctly presented in the WRAC presentation slide on page 118 of the draft EA. Additional information relating to agricultural water supply has been provided in response to comment #16.

FDACS and other interested parties can review and evaluate the additional water supply performance data that are available from the Water Management Model Runs including

the supply-side management report and the output of the economics post processor. These sources were reviewed by South Florida Water Management District staff as part of the alternatives evaluation.

In regard to the WCAs, the task of this EA was to compare alternatives and although we do not have a water quality model for those areas, to see if these alternatives meet the requirements of the Settlement Agreement, an analysis of STA efficiency indicates that CLA will export less TP to the WCA's than the base case. See response to item #20.

37. The water quality section of the analysis addresses potential benefits to Lake Okeechobee and estuarine water quality, but does not consider the effects of increased (10 – 15%) releases to the south on the performance of the STAs or phosphorus loading to the Everglades Protection Area.

RESPONSE:

See responses to # 18 & # 20.

38. Need clarification on how long the “temporary deviation” will be in effect.

RESPONSE: Refer to response #1.

RESPONSE TO:

South Florida Water Management District

Suggestions to add text and make editorial comments were made, as appropriate, and are not specifically listed in this section.

39. Suggest that the document be modified to clearly delineate between releases that are governed by the proposed regulation schedule temporary deviation from those that are made under the State's water supply authority.

RESPONSE:

Concur. Modifications will be made where appropriate.

40. Suggest inclusion of a calculation of the increased water volumes, as associated phosphorus loading, in water deliveries to the south under the CLA option.

RESPONSE:

Concur. See responses to items # 18 and # 20.

RESPONSE TO:
Clewiston Chamber of Commerce

41. Suggest getting the lake down to the prescribed “above sea level” parameters (13 ½ to 15 ½ feet.

RESPONSE:

It is not the intent of this adjustment of WSE to achieve such a dramatic change in lake stage. The intent is to remove water from the lake in a pro-active manner using, to the extent practicable, low volume discharges, so as to somewhat lower lake levels without impacting the estuaries or other project purposes. These goals cannot be achieved solely with schedule modification, but rather, will require changes to the C&SF infrastructure, as will occur in CERP. Also refer to response #4.

RESPONSE TO:
United States Fish and Wildlife Service

42. In several places, the EA states that the pulse releases will only be done after consulting estuarine experts, so that potential high releases will not negatively affect the estuaries. Is this consultation with experts required in any decision-making documentation?

RESPONSE:

Consultation with estuarine experts is not required in any decision-making document, but it is a recommendation in the Lake Okeechobee Regulation Study Environmental Impact Statement Document (USACE, 2000a). However, staff of the South Florida Water Management District and U.S. Army Corps of Engineers meet/discuss weekly or more frequently if necessary, to review meteorological, climatic, hydrologic, and environmental conditions of the systems relevant to Lake Okeechobee operations. Also, refer to response # 30.

43. We believe it would be appropriate to add a note in the officially accepted decision tree regarding the requirement to consult with estuarine experts.

RESPONSE:

Refer to response # 42.

44. We believe the EA would be much more effective if it more clearly explained how the predicted increased high flows to the estuaries will not significantly worsen adverse effects.

RESPONSE: Refer to response # 8.

RESPONSE TO:
Florida Sugar Cane League, Inc.
(prepared by: Landers & Parsons, P.A.)

45. To avoid the additional adverse impacts to agriculture in the Lake Okeechobee Service Area, permanent forward pumps should be included in your proposal to mitigate the harm that will be experienced as it was in 2001. Revisions to the existing water shortage plan of the SFWMD will be necessary.

RESPONSE: Refer to responses #16 & #17.

RESPONSE TO:
Florida State Clearinghouse Consolidated Comments

Florida Department of Environmental Protection

46. Suggests that estuarine salinity monitoring be implemented so that real-time water release adjustments can be made. Recommend that the model be supplemented with estuarine salinity monitoring to ensure that water releases do not cause harm to biological resources of the estuaries.

RESPONSE:

Every week the environmental recommendation on water releases are based on estuarine salinity monitoring.

South Florida Regional Planning Council

47. Recommends that impacts to natural systems be minimized; the extent of sensitive wildlife and vegetative communities be determined; and protection and/or mitigation of disturbed habitat be required.

RESPONSE:

Concur. The CLA minimizes adverse impacts to natural systems. Wildlife and vegetative communities potentially affected have been determined (refer to the EA, Section 3, Affected Environment). Refer to the EA, Section 4, Environmental Effects, for the preferred action. The CLA would allow for more flexibility for more environmentally sensitive management of discharges to the estuaries, and such releases would be beneficial to Lake Okeechobee's littoral/marsh zone.

THIS CONCLUDES THE COMMENT/RESPONSE SECTION

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



RODNEY BARRETO
Miami

SANDRA T. KAUPÉ
Palm Beach

H.A. "HERKY" HUFFMAN
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DAVID K. MEEHAN
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KENNETH D. HADDAD, Executive Director
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OFFICE OF POLICY AND STAKEHOLDER COORDINATION
October 14, 2004
(850)488-6661 TDD (850)488-
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Ms. Yvonne Haberer
Planning Division
Environmental Branch
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: Draft Environmental Assessment, Lake
Okeechobee Regulation Schedule, Water
Supply and Environmental for Lake
Okeechobee, Florida.

Dear Ms. Haberer:

The Habitat Conservation Scientific Services Office of the Florida Fish and Wildlife Conservation Commission (FWC), has prepared this letter regarding the Draft Environmental Assessment, Lake Okeechobee Regulation Schedule, Water Supply and Environmental (WSE) for Lake Okeechobee, Florida under the authority of the Fish and Wildlife Coordination Act of 1958. We have conferred with FWC's Division of Freshwater Fisheries and Fish and Wildlife Research Institute in outlining our concerns.

The temporary planned deviation is described to adjust classifications of hydrologic indicators and forecasts. The Class Limit Adjustments (CLA) would give water managers greater flexibility to make releases of water from the lake when the WSE does not presently call for discharges to downstream estuarine environments. Presently, the WSE decision tree does not provide releases at times when Lake Okeechobee stages are high and the conditions in the tributaries are described as normal or dry. This has resulted in high water levels in Lake Okeechobee even when conditions have been optimal to release excess water from the lake. The CLA simulation results indicate that these minor adjustments to class definitions could result in nearly doubling the percentage of time that releases are made to estuarine ecosystems, while in Zone D of the regulation schedule, to estuarine ecosystems with a slight increase in discharges to the Everglades Wildlife Management Areas (WMAs). Our comments will address the Draft Environmental Assessment (EA) and then the hydrologic management of Lake Okeechobee in general.

Concerns and Recommendations

Draft Environmental Assessment

The proposed action is called a "temporary planned deviation".

Is there a time limit involved when the proposed changes would end and the WSE would revert back to previous classification limits? The EA should clarify the time interval or conditions after which this action would not be implemented.

The Draft EA does not describe the Everglades WMAs nor does it consider the impacts of the proposed action on the Everglades WMAs.

Since the Everglades WMAs and areas downstream of the lake receive discharges from Lake Okeechobee, they must be described and considered in the evaluation of environmental impacts. These data have been evaluated by the South Florida Water Management District and are located in Appendix B of the draft EA. The likelihood or level of certainty that downstream areas would be subject to 'harm' or 'serious harm' needs to be considered in the draft EA. Appendix B indicates that there will be a slight increase in the discharges to the WMAs yet there is no discussion about the impacts to these areas within the draft EA. The FWC is concerned about impacts to fish and wildlife and their habitat within the WMAs. These impacts should be assessed before actual additional discharges are delivered to the WMAs. For example, deliveries should be restricted during the dry season when wading birds need consistent water recessions in order to have a successful nesting season.

Low volume releases may help avoid emergency releases to the estuaries.

Data indicate that additional Zone D releases to the St. Lucie Estuary may help avoid the large-scale "emergency" releases during the wet season that have occurred in the past. Conversely, the data indicate that there could be an increase in the large-scale releases to the Caloosahatchee Estuary. These large-scale water releases cause substantial damage to the ecology of the lower estuarine areas. A decrease in the number of low flow months would benefit upper estuary submerged aquatic vegetation. We note, however, that these different habitats cannot be equally offsetting as they are vastly different habitats with different flora and fauna and ecosystem functions. Appendix B indicates that the level of the modeled pulse releases was dependent on the lake elevation and not based on conditions in the estuary as the releases are actually executed. These changes may affect the results of this evaluation. Additionally, the FWC suggests flows of no lower than 800 cfs in the spring and 1,200 cfs in the fall for the ecological integrity of the estuary. These changes also may have affected the results of the evaluation.

Deviations or modifications of regulation schedules is good adaptive management.

Modifications to the schedule, to take advantage of even small changes, are a good way to gain environmental benefits until a new regulation schedule can be developed. Greater flexibility may allow water managers to keep the stages of Lake Okeechobee closer to the bottom of Zone

D of the WSE regulation schedule. The lake being operated at the bottom of Zone D would be closer to the lake levels that FWC has previously recommended for the benefit of fish, wildlife, and aquatic habitats in Lake Okeechobee. Additionally, this greater flexibility may result in less frequent extreme high lake levels similar to those that Lake Okeechobee has experienced in recent years.

Lake Okeechobee hydrologic management

FWC previously issued recommendations for Lake Okeechobee operations.

The FWC recommended that lake levels be managed between 12.0 ft and 15.5 ft National Geodetic Vertical Datum. The lake should experience both the minimum and maximum stage within the specified range every three years. Discharge events greater than 2,000 cubic feet per second (cfs) to the St. Lucie Estuary and 4,500 cfs to the Caloosahatchee Estuary should be avoided to minimize adverse effects on estuarine ecology. Additionally, the Caloosahatchee Estuary needs minimum flows of 800 cfs during the spring and 1,200 cfs during the fall to maintain the optimum salinity regime for submerged aquatic vegetation.

Releases of water should not negatively impact downstream habitats.

The impacts of water releases to the Everglades WMAs, St. Lucie Estuary, and the Caloosahatchee River will need to be monitored and evaluated to assess the success of the modified regulation schedule.

Long-term impact of low-level dry season releases is hard to predict.

We concur that the impacts of water releases to the St. Lucie Estuary during the dry season are difficult to predict. During the dry season (winter and spring), water releases may negatively impact species that rely on having higher salinities in specific areas of the estuary. Freshwater releases can cause persistent low salinity in the estuary where species such as the oyster (*Crassostrea virginica*) and the spot (*Leostomus xanthurus*) seasonally exist in larval or juvenile stages. Dry season releases need to be monitored in order to assess their impacts to estuarine species and their habitats.

The regulation schedule of the lake will need to be adaptively managed in the future.

The WSE regulation schedule will have to be modified as different ecosystem restoration components are introduced to the system. The addition of storage to the system will allow for greater flexibility in Lake Okeechobee water level management. While small changes to the WSE may be all that is possible now, our long-term targets may need to be addressed by new regulation schedules.

In conclusion we believe that the proposed changes to the WSE Regulation Schedule could result in substantial benefits for the fish, wildlife, and aquatic plants of Lake Okeechobee. As long as the water releases do not cause negative impacts to downstream environments, we believe that

Ms. Yvonne Haberer

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October 14, 2004

the changes constitute positive adaptive management until the regulation of Lake Okeechobee can be managed from a system-wide perspective. Questions regarding our concerns and recommendations can be directed to Mr. Chris Harnden at the Habitat Conservation Scientific Services Office in Vero Beach at (772) 778-5094.

Sincerely,



Brian S. Barnett, Director
Office of Policy and Stakeholder Coord.

bsb/ch

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ENV 2-16/10/2

CC: Mr. Carl Dunn, USACE, Jacksonville
Ms. Susan Gray, SFWMD, West Palm Beach
Mr. Charles E. Collins, Regional Director, FWC, West Palm Beach



CHARLOTTE HARBOR NATIONAL ESTUARY PROGRAM

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October 11, 2004

Colonel Robert M. Carpenter
District Engineer
Department of the Army
Jacksonville Corps of Engineers
P.O.Box 4970
Jacksonville, Florida 32232-0019

Re: Finding of No Significant Impact, WSE Temporary Deviation

Dear Colonel Carpenter:

Thank you for your letter of March 23, 2004, regarding the review and evaluation of the Water Supply and Environmental (WSE) schedule for Lake Okeechobee and your reference to the Florida Fish and Wildlife Conservation Commission (the Commission) document entitled "Management of Lake Okeechobee and Associated Estuaries." Your letter laid out your plans to implement temporary deviations to the WSE. This letter relates to these issues and comments on the Army Corps of Engineers Preliminary Finding of No Significant Impact (FONSI) for the Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts, released on September 10, 2004.

Premature

At the July 14 South Florida Water Management District (the District) Governing Board meeting, the CHNEP was part of a coalition of partners that requested a re-examination of the Class Limit Adjustment (CLA) alternative to improve water delivery to the Caloosahatchee Estuary and to host a public meeting on the West Coast. This meeting was held on August 4. One compromise suggested by Governing Board member Trudi K. Williams, and endorsed by stakeholders that attended the meeting, was allowing staff greater latitude to release water to the Caloosahatchee River when the Lake was in Level E. With the rash of hurricanes, any action regarding these issues was delayed. It is our understanding that the issue will be discussed at the October 13 Governing Board meeting. Given pending issues and discussion on the District side, it is premature for the Corps to adopt the temporary deviation until alternatives which provide the best water delivery to lakes, estuaries, and consumers can be identified.

Increased Damaging Freshwater Flows

The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee. According to the Corps, the number of months with high flows between 2800 and 4500 cfs will increase by 5 over the Base and the frequency of high flows exceeding 4500 cfs will increase by 2 months. These high flows have adverse impacts to recreational fisheries, blue crab fisheries, and water quality.

Colonel Robert M. Carpenter

October 11, 2004

Finding of No Significant Impact, WSE Temporary Deviation

Page 2 of 2

Lake Levels

In your earlier letter, you acknowledged receipt of the Florida Fish and Wildlife Conservation Commission document entitled "Management of Lake Okeechobee and Associated Estuaries." The Commission recommends that Lake Okeechobee be "kept between 12.0 feet and 15.5 feet National Geodetic Vertical Datum, with these low and high water levels being met every 3 years." The Commission recommendations should be incorporated in the WSE schedules.

Recommendation

We recommend that the Corps delay any action on the Preliminary Finding of No Significant Impact. This will allow the Corps to work with the District to develop Management Strategies that benefit the entire Lake/Everglades system. The current proposed action would further harm an already degraded Caloosahatchee Estuary. This impact is significant to both environmental and economic values. The WSE temporary deviation should incorporate the Commission's short term recommendations to address harm placed on the Lake, estuaries, and Water Conservation Areas (WCAs). These recommendations include:

Water levels in Lake Okeechobee should be kept between 12.0 feet and 15.5 feet National Geodetic Vertical Datum, with these low and high water levels being met every 3 years. Annually, water levels within Lake Okeechobee should be dropping from November through June, stable through August, and peaking in October. Discharges to the Caloosahatchee and St. Lucie rivers, and WCAs should be timed to match natural hydrologic cycles as much as possible (i.e., major discharges should occur during annual wet periods). Discharge events to the St. Lucie Estuary greater than 2000 cubic feet per second (cfs) and flows greater than 4500 cfs to the Caloosahatchee Estuary should be avoided to minimize adverse effects on estuarine ecology. In regard to the Caloosahatchee Estuary, minimum fresh water flows of 800 cfs in the spring and 1200 cfs in the fall are needed to maintain optimum salinities for submerged aquatic vegetation.

Thank you for the opportunity to comment on the Preliminary FONSI. We look forward to the Corps incorporating these recommendations into the final policy.

Sincerely,



Lisa B. Beever, PhD, AICP

Director

Charlotte Harbor National Estuary Program

Cc: Henry Dean, Director, SFWMD
Trudi K. Williams, Governing Board, SFWMD
John Zediak, Chief, Water Management and Meteorology Section

Haberer, Yvonne L SAJ

From: sbrookperson [sbrookperson@otterwater.com]
Sent: Monday, November 01, 2004 10:47 AM
To: Haberer, Yvonne L
Subject: Proposed Lake Okeechobee WSE Deviation - Public Comment

Please accept the attached letter from the Southwest Florida Watershed Council – it replaces the letter we submitted to you on October 10th.

Thank you,

Susan Brookman
sbrookperson@otterwater.com
239.694.7572 (Home)
239.822.1319 (Cell)



October 22, 2004

Colonel Robert M. Carpenter, District Engineer
U.S. Army Corps of Engineers, Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Finding of No Significant Impact, WSE Temporary Deviation

Dear Colonel Carpenter:

Since I last wrote to you on behalf of the Natural Resources Committee of the Southwest Florida Watershed Council on October 10th to discuss the Preliminary Finding of No Significant Impact regarding the Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts, two meetings have taken place that make that letter obsolete. I'm now writing on behalf of the full membership of the Southwest Florida Watershed Council, which met on October 21st, to offer the following comments.

The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee. According to the Corps, the number of months with high flows between 2800 and 4500 cfs will increase by 5 over the Base, and the frequency of high flows exceeding 4500 cfs will increase by 2 months. This likelihood led the SFWMD to originally proclaim that the CLA alternative would have an adverse impact on the Caloosahatchee Estuary. The SFWMD later reversed its findings and determined that the alternative would have a neutral impact on the Estuary, despite any actual changes to the alternative. We are curious as to how the Recovery and Prevention Strategy for the Caloosahatchee Minimum Flows and Levels Rule was considered during the analysis of the CLA alternative.

The CLA alternative was selected because it allowed the SFWMD to manage the Lake at lower levels. We are fully supportive of this effort, however, we are not supportive of an alternative that harms the Caloosahatchee Estuary, while all other segments of the system are either unaffected or improved. If the goal is to release more water from Lake Okeechobee, then all segments should share in any harm that results. Shared adversity is a concept with merit, and it should be put into practice so that no single portion of the system suffers unduly.

A priority of the Corps and the District should be to maintain the Lake at a lower level in order to avoid situations where damaging flows are released. We fully support the Florida Fish and Wildlife Commission's recommendation that Lake Okeechobee be managed between 12 feet and 15.5 feet. This management schedule would protect and improve the ecological health of both the Lake and the Caloosahatchee and St. Lucie Estuaries.

The mission of the Southwest Florida Watershed Council is to provide leadership and resources to protect the land and water resources of the Caloosahatchee and Big Cypress Watersheds. Through increased awareness, participation and cooperation among all stakeholders in consensus building, planning and decision making, we are working to meet the economic, natural and cultural needs for this and succeeding generations.

We respectfully request that the Army Corps of Engineers delay any action on the Preliminary Finding of No Significant Impact. This will allow the Corps to work with the SFWMD to find management strategies that benefit the entire Lake Okeechobee/Everglades system. The proposed action would further harm the already degraded Caloosahatchee Estuary, and that is unacceptable. A goal of the cooperation between the Corps and the SFWMD should be to establish a WSE schedule that manages Lake Okeechobee between 12 feet and 15.5 feet, per the recommendation of the Florida Fish and Wildlife Commission.

It had been our understanding in talking with Corps representatives that a public meeting would be held to gather input regarding the proposed action, and we understand that such a meeting was held in Fort Myers on October 19th. We did not receive notification about the meeting from the Corps until after the meeting occurred (the news release reached our mailbox on October 21st), and therefore did not participate in it. We would still like to discuss our concerns with you, and **we invite you or another representative of the Corps to attend our next meeting (3:00 p.m., Thursday, November 18th at our office on 8359 Beacon Boulevard in Fort Myers).** You can reach me via email at sbrookperson@otterwater.com or by cell phone at (239) 822-1319. I look forward to hearing from you regarding our concerns.

Sincerely,

Susan Brookman
Susan Brookman
Chairman

cc: Mr. Henry Dean, Executive Director, SFWMD
Dr. Susan Gray, Lake Okeechobee Division Director, SFWMD
Mr. Bob Howard, Director of Operations, SFWMD
Mr. Chip Merriam, Deputy Executive Director, SFWMD
Honorable John Albion, Chairman, Lee County Commission
Mr. David Burr, Executive Director, Southwest Florida Regional Planning Council



October 10, 2004

Colonel Robert M. Carpenter, District Engineer
U.S. Army Corps of Engineers, Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Finding of No Significant Impact, WSE Temporary Deviation

Dear Colonel Carpenter:

I am writing to you on behalf of the Natural Resources Committee of the Southwest Florida Watershed Council, which met on Friday, October 8th to discuss the Preliminary Finding of No Significant Impact regarding the Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts, which was released on September 10, 2004.

We would first like to stress that it is our opinion that the release of this document is premature. At the July 14th Governing Board meeting of the South Florida Water Management District (SFWMD), several of our members raised concerns with the potential adoption of the Class Limit Adjustment (CLA) alternative to the Water Supply and Environment (WSE) schedule because of its detrimental impacts on the Caloosahatchee. At this meeting the Governing Board members directed staff to re-examine the CLA alternative and to hold a meeting with interested citizens in Southwest Florida to explore opportunities for compromise. This meeting was held on August 4th in Southwest Florida. A compromise, which was suggested by Governing Board member Trudi Williams and endorsed by stakeholders who attended the meeting, was the possibility of allowing staff greater latitude to release water into the Caloosahatchee River when the Lake was in Level E.

It was our understanding that this compromise and a harder look at the CLA would be undertaken before the SFWMD advanced the CLA proposal to you. Unfortunately, the rash of recent hurricanes appears to have pushed back action regarding these issues. Although we have not been able to confirm this, we presume that Ms. Williams will bring the CLA up for discussion at the SFWMD Governing Board meeting this week, since it is her last before resigning to take elected office. Due to the possible changes to the WSE schedule, we believe it is unwise for the Corps to move forward with this deviation at this time. It is logical for the Corps to table this process until the SFWMD completes its revisions to the WSE schedule. It would be a mistake for the SFWMD and the ACOE to adopt two different deviations.

The mission of the Southwest Florida Watershed Council is to protect, conserve, manage and/or restore the land and water resources of the Caloosahatchee and Big Cypress Watersheds. Through increased awareness, participation and cooperation among all stakeholders in consensus building, planning and decision making, we are working to meet the economic, natural and cultural needs for this and succeeding generations.

We would also like address our specific concerns with the proposed action. The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee. According to the Corps, the number of months with high flows between 2800 and 4500 cfs will increase by 5 over the Base, and the frequency of high flows exceeding 4500 cfs will increase by 2 months. This likelihood led the SFWMD to originally determine that the CLA alternative would have an adverse impact on the Caloosahatchee Estuary. The SFWMD later revised its findings and determined that the alternative would have a neutral impact on the Estuary, despite any actual changes to the alternative. We are curious as to how the Recovery and Prevention Strategy for the Caloosahatchee Minimum Flows and Levels Rule was considered during the analysis of the CLA alternative.

The CLA alternative was selected because it allowed the SFWMD to manage the Lake at lower levels. We are fully supportive of this effort, however, we do not support an alternative that harms the Caloosahatchee Estuary, while all other segments of the system are either unaffected or improved. If the goal is to release more water from Lake Okeechobee, then all segments should share in the amount of harm, if any, that results. Shared adversity is a concept with merit, and it should be put into practice so that no single portion of the system suffers unduly.

A priority of the Corps and the SFWMD should be to maintain the Lake at a lower level in order to avoid situations where damaging flows are released. We fully support the Florida Fish and Wildlife Commission's recommendation that Lake Okeechobee be managed between 12 feet and 15.5 feet. This management schedule would protect and improve the ecological health of both the Lake and the Caloosahatchee and St. Lucie Estuaries.

We respectfully request that the Army Corps of Engineers delay any action on the Preliminary Finding of No Significant Impact. This will allow the Corps to work with the SFWMD to find management strategies that benefit the entire Lake Okeechobee/Everglades system. The proposed action would further harm the already degraded Caloosahatchee Estuary, and that is unacceptable. A goal of the cooperation between the Corps and the SFWMD should be to establish a WSE schedule that manages Lake Okeechobee between 12 feet and 15.5 feet, per the recommendation of the Florida Fish and Wildlife Commission.

It had been our understanding in talking with Corps representatives that a public meeting would be held to gather input regarding the proposed action, and we would be happy to schedule such a meeting if it would be helpful to you. We look forward to the Corps moving forward with these recommendations.

Sincerely,

Susan Brookman
Susan Brookman
Chairman

cc: Mr. Henry Dean, Executive Director, SFWMD
Honorable Trudi Williams, Governing Board Member, SFWMD
Dr. Susan Gray, Lake Okeechobee Division Director, SFWMD
Mr. Bob Howard, Director of Operations, SFWMD
Mr. Chip Merriam, Deputy Executive Director, SFWMD
Honorable John Albion, Chairman, Lee County Commission
Mr. David Burr, Executive Director, Southwest Florida Regional Planning Council

Collier County
1450 Merrihue Drive
Naples, Florida 34102

Phone 239.262.0303
Fax 239.262.0672



CONSERVANCY
Of Southwest Florida

*Protecting the nature of our
community for 40 years.*

Lee County
2123 First Street, Suite F
Fort Myers, Florida 33901

Phone 239.275.0038
Fax 239.275.7089

October 12, 2004

Enclosed is a hard copy of a letter to Colonel Carpenter sent via e-mail today. Please include this letter in the comments for the record.



October 12, 2004

THE CONSERVANCY Of Southwest Florida

1450 Merrihue Drive • Naples, Florida 34102
239.262.0304 • Fax 239.262.0672
www.conservancy.org

Colonel Robert M. Carpenter
U.S. Army
District Engineer
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Finding of No Significant Impact, WSE Temporary Deviation

Dear Colonel Carpenter:

This letter is in response to the Army Corps of Engineers Preliminary Finding of No Significant Impact regarding the Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts, which was released on September 10, 2004. We are writing on behalf of our 6,000 member families in Southwest Florida, many of whom enjoy the attributes of the Caloosahatchee River and Estuary.

We would first like to stress that it is our opinion that the release of this document is premature. At the July 14, Governing Board meeting of the South Florida Water Management District we raised concerns about the potential adoption of the Class Limit Adjustment (CLA) alternative to the Water Supply and Environment (WSE) schedule because of its detrimental impacts on the Caloosahatchee. At the meeting the Governing Board members directed staff to re-examine the CLA alternative and to hold a meeting with interested citizens in Southwest Florida to explore opportunities for compromise. This meeting was held on August 4, in Southwest Florida. One compromise that was suggested by Governing Board member Trudi Williams and stakeholders who attended the meeting was the possibility of allowing staff greater latitude to release water into the Caloosahatchee River when the Lake was in Level E.

It was our understanding that this compromise and a harder look at the CLA would be undertaken before any approvals were granted. Unfortunately, the rash of hurricanes has pushed back any action regarding these issues. It is our understanding that the issue will be discussed at the October 13 Governing Board meeting. Due to these possible additional changes to the WSE schedule, it is unwise for the Corps to move forward with approval of the CLA deviation at this time. It is logical for the Corps to table this process until the SFWMD completes their suggested revisions to the WSE schedule. It would be a mistake for the SFWMD and the ACOE to adopt two different deviations.

We would also like to take this time to address our specific concerns with the proposed action. The adoption of the CLA alternative will negatively impact the Caloosahatchee Estuary by increasing the frequency of damaging high flows from Lake Okeechobee.

October 12, 2004

Page 2

According to the Corps, the number of months with high flows between 2800 and 4500 cfs will increase by 5 over the Base, and the frequency of high flows exceeding 4500 cfs will increase by 2 months. This led the Water Management District to originally proclaim that the CLA alternative would have an adverse impact on the Caloosahatchee Estuary. The District later reversed its findings and determined that the alternative would have a neutral impact on the Estuary, despite no actual changes to the alternative. The CLA alternative was selected because it allowed the District to manage the Lake at lower levels. We are fully supportive of this desire, however, we are not supportive of an alternative that only harms the Caloosahatchee Estuary, while all other segments of the system are either unaffected or improved. If the goal is to release more water from Lake Okeechobee, then all segments should share in the amount of harm, if any, that results.

A priority of the Corps and the District should be to maintain the Lake at a lower level in order to avoid situations where damaging flows are released. We fully support the Florida Fish and Wildlife Commission's recommendation that Lake Okeechobee be managed between 12 feet and 15.5 feet. This management schedule would protect and improve the ecological health of both the Lake and the Caloosahatchee and St. Lucie Estuaries.

To conclude, we respectfully request that the Army Corps of Engineers delay any action on the Preliminary Finding of No Significant Impact. This will allow the Corps to work with the District to find management strategies that benefit the entire Lake Okeechobee/Everglades system. The current proposed action would further harm the already degraded Caloosahatchee Estuary. A goal of the cooperation between the Corps and the District should be to establish a WSE schedule that manages Lake Okeechobee between 12 feet and 15.5 feet, per the recommendation of the Florida Fish and Wildlife Commission. We look forward to the Corps moving forward with these recommendations. If you have any questions regarding our position, please call me at (239) 408-4222 or email me at GaryD@Conservancy.org.

Sincerely,



Gary A. Davis, Director
Environmental Policy Division

cc: Henry Dean, Director, SFWMD
Trudi Williams, Governing Board, SFWMD
Susan Gray, SFWMD
Bob Howard, SFWMD
Chip Merriam, SFWMD
John Albion, Chair, Lee County Commission

Board of Directors

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Edward R. Weinberg

Kevin Henderson
Executive Director
Beverly Bevis Jones, A.P.R.
Director of Development & Public Relations

October 8, 2004

Ms. Yvonne Haberer
Planning Division
Environmental Branch
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Draft EA, Lake O Temporary Deviation

Dear Ms. Haberer:

We have reviewed the Draft EA, and we were involved in the public workshops on the various options for immediate improvements to WSE that preceded preparation of this document. We agree the proposed Class Limits Adjustment to WSE will have no significant impacts, and that is the shame of it. Although CLA is movement in the right direction, it is so small a movement that its value is negligible.

We believe this is due to the failure of SFMWD and USACE to address fatal flaws in estimated irrigation demand used to justify holding Lake O at excessively high levels. This failure limits your ability to produce anything close to a balanced Lake O operations schedule. The flawed Water Supply component of WSE continues to trump the Environment component.

Imagine our situation today if Lake O had been at the top of Zone D this summer rather than at the bottom, and the Kissimmee Valley lakes at regulation stages rather than drawn down for Toho dewatering. We would have had a flood disaster. Surely the Corps can realize the danger presented by continuing the present Lake O regulation schedule.

CLA will not achieve the minimum safe requirement of keeping Lake O at the bottom of Zone D to the extent possible. The Temporary Deviation has helped, and you deserve credit for that. A very dry spring and early summer helped more, and that is luck, not skill.

This past year is a typical atypical Florida water year. Here in Stuart we were 12" behind in annual rainfall in August, now we are 16" ahead. What is typical is the Caloosahatchee and St. Lucie Estuaries are being pounded with large regulatory releases, like last year and the year before that. Every year the public explanations are different, but the root cause remains the same: too much water in Lake O.

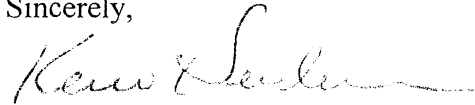
In truth, no Lake O regulation schedule could prevent excess drainage duress to the Estuaries due to our recent storms. Modwaters would help if it were constructed. CERP would help.



Revisions to the Kissimmee Valley regulation schedules would help, and modifications to SFMWD drainage rules that are allowing peak drainage discharges from developed land to consistently increase would help.

Also in truth, if all of the above are not done and done promptly, the promise of estuarine restoration is a myth. We are way past due for actions bolder than baby steps.

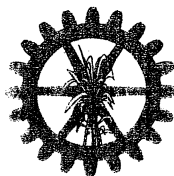
Sincerely,

A handwritten signature in dark ink, appearing to read "Kevin Henderson", with a long, sweeping horizontal line extending to the right.

Kevin Henderson
Executive Director

C: Henry Dean

Sugar Cane Growers Cooperative of Florida



POST OFFICE BOX 666

33430-0666

BELLE GLADE, FLORIDA

October 5, 2004

James C. Duck
Chief of Planning Division
Jacksonville District
U. S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Subject: Lake Okeechobee Regulation Schedule

Dear Mr. Duck:

Thank you for the opportunity to comment on the proposed Finding of No Significant Impact for a temporary deviation from the Lake Okeechobee regulation schedule. We support the effort to make the operating rules for the Lake more flexible as long as the Lake's ability to supply water to agriculture is not impaired. Based on our review of the Environmental Assessment we have some doubt whether that is the case for this proposal.

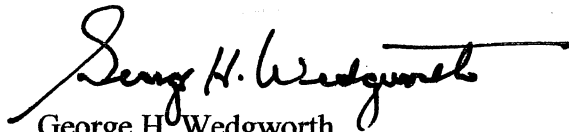
The proposed action is referred to as a "temporary planned deviation" but the term temporary is not defined. The analysis indicates that the proposal will result in a change to the WSE schedule that will remain in place indefinitely. In that case the conclusion that water supply will not be affected is incorrect. The analysis shows that the proposal will result in a reduction of almost 200,000 acre-feet of water supply for agriculture in years where agricultural irrigation is already being rationed. The impact of this could be very significant. The modeling also shows that the Lake would have gone into the 2001 water shortage several tenths of a foot lower with this proposal. This would result in very serious economic impacts to agriculture that are apparent from your assessment but are not captured in your analysis.

Enclosed for your review is a report on the economic impacts to agriculture resulting from the 2001 water shortage. Agricultural losses were on the order of \$100 million in that event and it appears they would have been even higher with this proposal. It is worth noting that the 2001 event included, for the first time, pumped outflow from the Lake for water supply. There is no mention of these 'forward pumps' in your proposal and without them water supply impacts would be extremely severe.

We have previously expressed this position with the Corps of Engineers, the South Florida Water Management District, and their Water Resources Advisory Commission that any plan that modifies the Lake level must include a revised Water Shortage Plan and the installation of pumping facilities so agricultural water requirements could be met even at low Lake levels. Without those, there is no basis to claim that the water supply consequences of this proposed schedule change would not be significant.

We would be happy to meet with you or your staff to discuss these issues further. Thank you for considering these comments.

Sincerely,

A handwritten signature in black ink, reading "George H. Wedgworth", with a long horizontal flourish extending to the right.

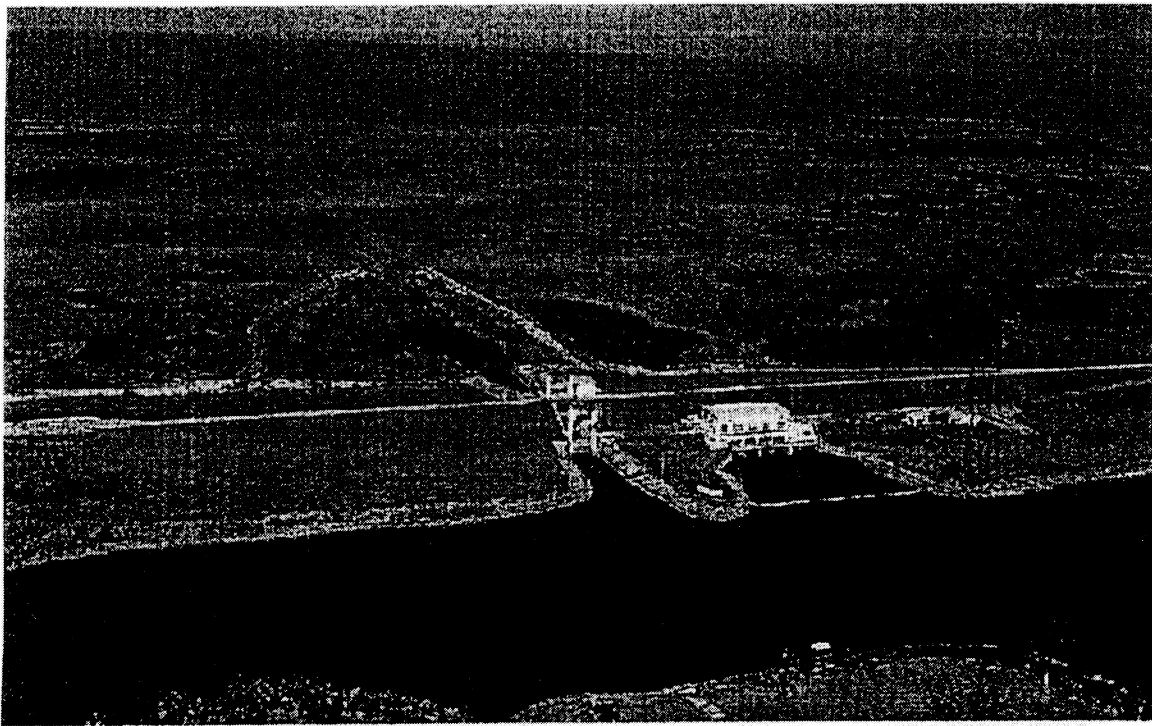
George H. Wedgworth
President

GHW:BJM:swd
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Enclosure

Economic Impact to Agriculture as a Result of Water Use Restrictions in 2000-2001

A summary of revenue losses experienced by growers in the Lake Okeechobee Water Service Area due to the drought and water use restrictions during the winter and spring of 2000-2001.



Aerial view of the S-135 structure complex during the water shortage. The structure, located on the east side of Lake Okeechobee, is used to make irrigation releases to agricultural users downstream. Because of the low level of the Lake (seen in the background) the structure was no longer hydraulically connected to the Lake.

MacVicar, Federico & Lamb, Inc.

Published in May ,2004

Based on Data Compiled in October, 2002

Executive Summary

The extreme water shortage during the first six months of 2001 was the direct result of a combination of environmental water management decisions by the South Florida Water Management District and severe drought in the Lake Okeechobee watershed. The decision to lower the lake level to 13.0 feet by June 2000 to improve the habitat in the lake caused the District to release a half million acre-feet of water during one of the driest spring seasons ever recorded. In spite of predictions of above normal wet season rainfall, the dry weather continued through the summer, and the lake, which had fallen to a 12-foot stage by June, was still at 12.0 feet in early November. The entire wet season passed without any additional water being stored in the lake. There are over 700,000 acres of irrigated agriculture dependent on supplemental water from the lake during dry periods. The low lake level, culminating in a record low level of 8.97 feet on May 23, 2001, required rationing of the available supply from November 2000 to June 2001.

In response to the crisis, the Water Management District set up an interactive management process to make weekly decisions on how much water would be made available to agriculture and when and where it would be released. They also took the unprecedented step of installing large capacity pumps at the three primary outlet structures from the lake to the Everglades Agricultural Area to force water out of the lake when the level was too low to allow sufficient gravity flow. The aggressive action by the District in employing new management strategies and installing new equipment in ways that had never been tried averted an economic catastrophe for the thousands of people involved in the agricultural economy of south Florida.

This report summarizes economic information provided by many of the growers after the 2002 harvest in an attempt to estimate the total regional economic impact to sugar cane farmers and citrus growers caused by water shortage. Other crops also suffered losses but sufficient data were only available to provide specific impact estimates for the two dominant crops, citrus and sugar cane. Growers controlling 70% of the cane acreage reported loss information. The resulting analysis indicated a 6.4% reduction in yield caused by the water shortage. This amounts to \$54 million in lost revenue to the growers. The annual report provided by the USDA confirms the reduction.

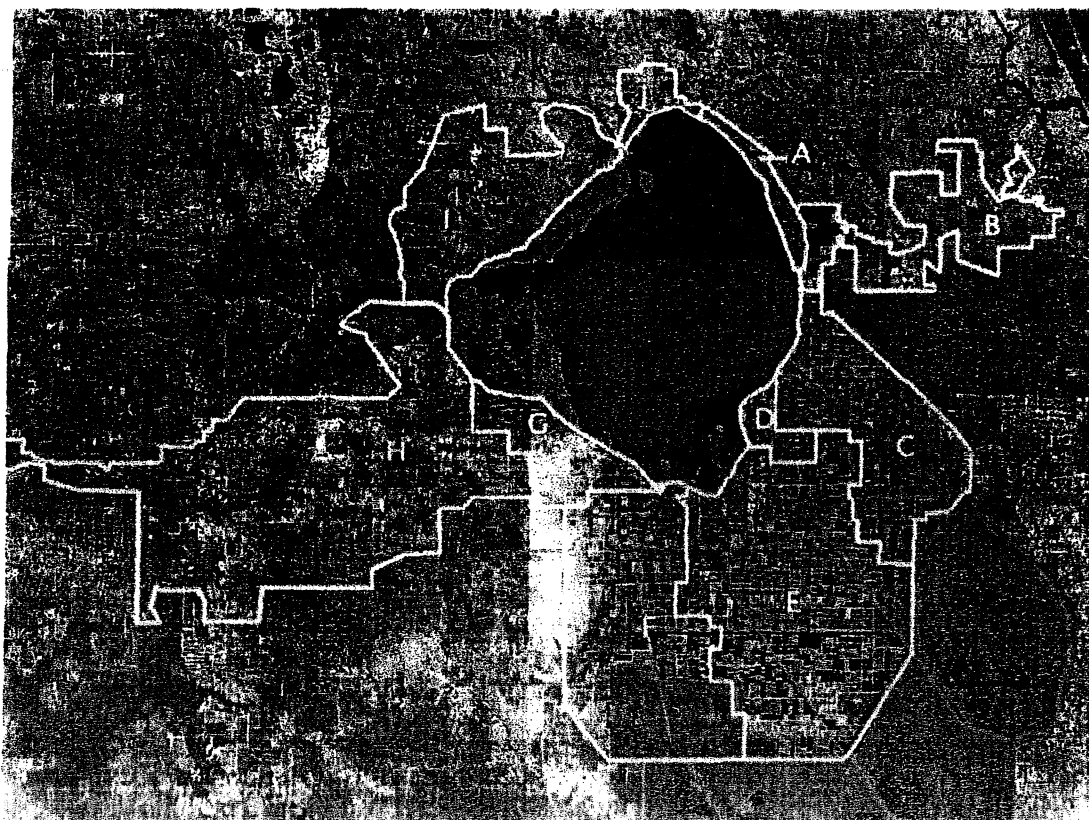
The estimate of the impact to citrus growers was based on the best available data reported by the growers who responded. This information was used to estimate the impact to the citrus acreage dependent on the Lake for irrigation. Different varieties of citrus mature at different times of the year and were affected differently by the water shortage. A conservative analysis of the information indicates revenue losses to citrus growers in excess of \$34 million.

Losses that could not be quantified include those incurred by juice and cane processors who produced less product, vegetable and rice growers who either could not plant or could not follow normal cultivation practices which lowered the value of both the 2001 and 2002 crops, and increased operational expense for all farmers who had to adapt to the changing irrigation requirements that evolved during the shortage.

The Study Area

This report is limited to the agricultural area whose supplemental irrigation needs are supplied from Lake Okeechobee. The figure below was taken from the SFWMD Water Shortage Web site. The table is based on the final acreage breakdown utilized by the District to divide the weekly water allocations.

Sub Area	Sub-Area Name	Crop Acreage		Primary Soil Type
		Citrus	Row Crops	
A	Northeast Lake Shore	420	7,289	Sand
B	St. Lucie Canal (C-44)	47,575	8,776	Sand
C	West Palm Beach Canal & L-8	7,590	123,537	Peat
D	East Beach & East Shore Water Control Districts	0	13,054	Peat
E	North New River & Hillsboro Canals	234	230,146	Peat
F	Miami Canal	2,426	113,325	Peat
G	C-21 & S-236 Basins	0	34,122	Sand
H	Caloosahatchee River (C-43)	68,219	58,311	Sand
I	Northwest Lake Shore	4,362	2,101	Sand
J	North Lake Shore	117	1,060	Sand



Water Conditions

The climate and water management conditions leading up to the declaration of a water shortage and the imposition of water use restrictions by the South Florida Water Management District in November 2000 were truly unique. The south Florida climatic pattern is characterized by its wet summer and fall seasons and dry winter and spring. Extremes on the wet side usually result from heavier than normal tropical system related rainfall in the summer and fall (which was the case in 1994 and 1995), or el nino events that bring heavy rain in the winter (which was the case in 1998). Significant regional water shortages occur when the wet season produces very little excess rainfall (rainfall in excess of evapotranspiration) so regional storage facilities, such as Lake Okeechobee, do not receive enough inflow to provide supply for the following dry season. When the winter and spring following a dry summer are also dry, Lake Okeechobee recedes to a low level and water use restrictions are imposed. This has been the case in 1981, 1989 and 2000.

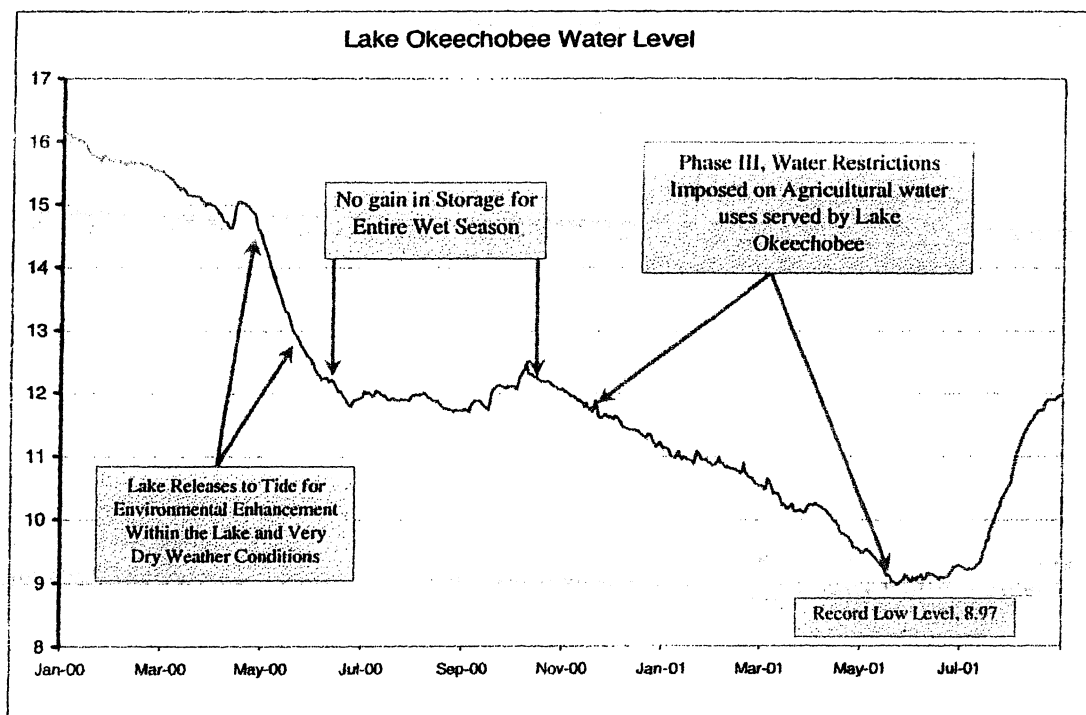


Figure 1. *Water Level in Lake Okeechobee from January 2000 through July 2001*

An additional complication was added to the 2000-2001 water shortage because of management decisions to improve the ecology of Lake Okeechobee. The wet conditions from 1994 through 1998 resulted in sustained above normal water levels in the Lake and a

subsequent reduction in shoreline vegetation that provides habitat for fish and wildlife. In an effort to encourage the re-establishment of the vegetation, the Water Management District began a deliberate course of action to lower the Lake level by discharging large quantities of water to the Atlantic Ocean and the Gulf of Mexico. This occurred during a very dry period. The result was that, through the release of water to tide, evaporation from the Lake surface and the release of water for agricultural irrigation, the Lake stage fell over three feet from April 15th through July 1st, a reduction of over 1.2 million acre feet.

Water Allocations to Agriculture

Every farm in south Florida must have a permit to use water for irrigation. The allocation for an agricultural project, calculated and authorized through a consumptive use permit issued by the South Florida Water Management District, is the volume of water needed to meet irrigation demands during a moderate drought, and is dependent on factors such as crop, soil type, local rainfall conditions, the irrigation method, number of plantings, and number of acres. However, during a severe drought, the District's Water Shortage Plan supersedes the allocations in the Water Use permits, and the water available for irrigation is specified through use restrictions in Water Shortage orders issued by the SFWMD Governing Board.

In November 2000 the South Florida Water Management District declared a Phase 3 Water Shortage for irrigation uses dependent on water from Lake Okeechobee, and implemented what the District refers to as the Supply-Side Management Plan to ration water to individual farms.

Supply-Side Management was developed as an allocation method to "manage a limited surface water supply and recognize the need to hold water in reserve for anticipated high-demand periods, yet be flexible and responsive enough to allow for short-term fluctuations of supply and demand." (SFWMD Supply Side Management Report, 1991) The allocation for individual farms is determined weekly based on two independent sets of calculations. The first calculation is to determine how much water could be released weekly from Lake Okeechobee for irrigation purposes and the second is to determine how to divide the available water among the users dependent on the Lake.

The first calculation is based on historical rainfall and seasonal demands for Lake Okeechobee supply (for example, irrigation demands are higher in April/May compared to January/February due to higher temperatures and longer daylight. The resulting increase in crop water need must be offset through additional irrigation in those months). The variability

in rainfall and crop demand is evaluated against the available storage in Lake Okeechobee, with the goal of managing the weekly allocation so that water remains available to meet irrigation demands throughout the dry season.

The second calculation is to determine how to equitably divide the available water between the users. The Lake service area was divided into 10 sub-basins, based on the water control structures used by the District to release Lake Okeechobee water to each area. The monthly demand for each sub-basin was calculated using the Blaney-Criddle equation (which is used by the District in permitting to determine monthly supplemental irrigation demands), based primarily on the crop type and irrigated acreage for each permitted project. The monthly demands were used to determine the percentage of available water that should be supplied to each sub-basin, not the actual amount that would be delivered. Each week, the District posted on its web site the amount of water that could be used by an individual farm depending on its location and crop.

Based on discussions with the affected growers, adjustments were made to the calculated distributions to allow for water demands in specific areas without increasing the amount released from the Lake. For example, more water went to citrus-dominated sub-basins during the period when the next year's fruit was being set, and water was shared with cane-dominated sub-basins during the month of February when the Blaney-Criddle equation calculated an almost-zero supplemental crop allocation for sugar cane.

Due to the extremely low water levels in Lake Okeechobee, Supply-Side Management remained in effect from November 26th 2000 through October 10, 2001. Once the rains resumed in early June the rationing of water for irrigation was not needed.

As a result of the water rationing, less than 50% of the calculated crop demands were supplied to the farms in the Lake service area (Figure 2). Figure 2 shows estimated demands during a one-in-ten-year drought compared to the actual water made available to growers. The 2000/2001 water shortage was more severe than a one in ten in many areas.

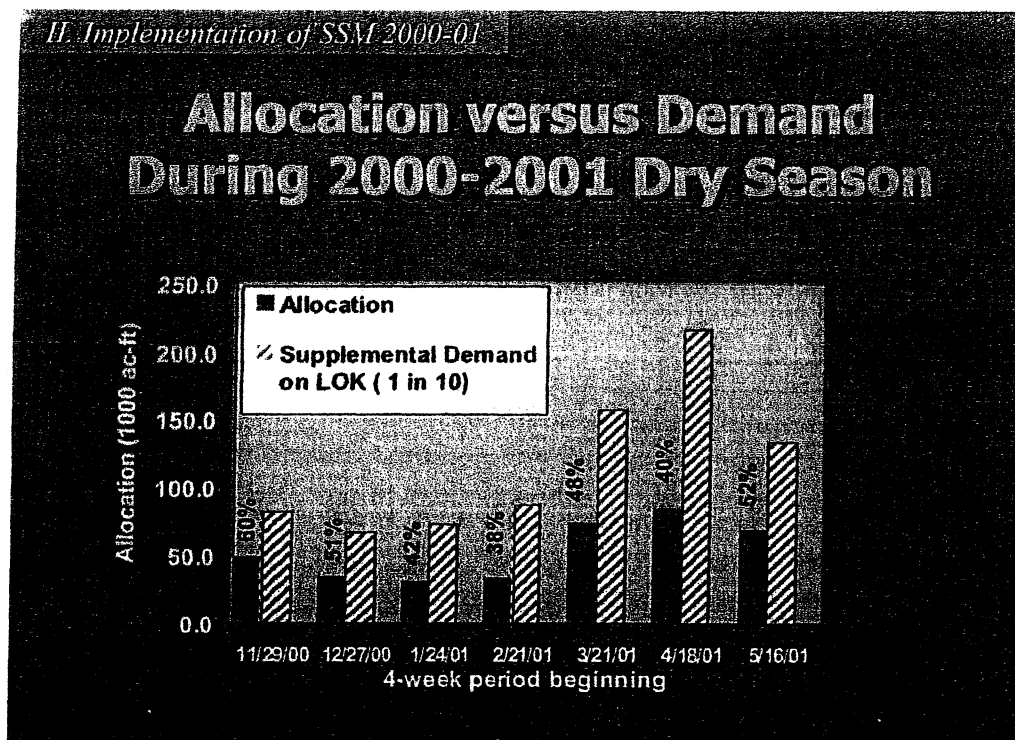


Figure 2. Chart from WMD presentation of percent of demand met.

Economic Impacts

Methodology

The information on drought impacts to crop production and the economic consequences of those impacts was obtained from large agricultural producers in the area served by Lake Okeechobee. Data were compiled for citrus and sugar cane and reduced to a per-acre impact for each crop. The Everglades Agricultural Area (EAA) is characterized by muck soil. The muck soil has a high water holding capacity that, combined with the ability to manage the water table, improves crop performance during droughts. Sugar cane is the dominant crop in the EAA, but rice, sod, sweet corn and winter vegetables are also important. The other agricultural areas served by the lake have predominantly sandy soils with both citrus and sugar cane occupying large areas. The crops grown on sandy soils were more difficult to manage during the shortage because of the reduced water holding capacity of the soil, the seepage losses experienced in the conveyance canals between the lake and the farms, and the inability to maintain the water table near the root zone of the crops.

Once the data were obtained for each crop and each major area, the economic impact per acre was calculated. The value was then applied to all the irrigated acres in the respective areas to develop the total estimated drought induced revenue loss for the service area.

Citrus. At the time of the 2000-2001 water shortage, there were 130,000 acres of citrus in cultivation in the areas dependent on Lake Okeechobee for irrigation. The water shortage was in force for most of the 2000-2001 harvest season, and was especially severe for the period when fruit were expected to be set in the spring of 2001. The impact of the shortage showed up initially with smaller fruit and slightly reduced yield during the 2000-2001 season and a more severe impact the following year due to the stress caused during fruit set in the spring of 2001.

After the water shortage, several of the larger growers provided specific information related to the economic impact of the drought on citrus production. One grower and processor reported a loss of \$2 million due to smaller fruit in 2001 and \$6 million in 2002 due to lower production. Another grower provided detailed, specific information that isolated the impacts of the water shortage on the specific citrus varieties grown in the area. This grower had significant acreage planted in early and mid-season varieties and in valencias, which mature later in the season, along with a small amount of grapefruit. The property holdings were such that most of the production was from groves not served by Lake Okeechobee. These groves were irrigated from groundwater wells and were not subject to the water use cutbacks that were imposed on the users of Lake water. Approximately 1500 acres, with the same fruit varieties, were dependent on lake water for irrigation. The trees were the same age and variety, and, since they were in the same area and exposed to the same rainfall and climate conditions, these acres provided useful comparative information that allowed the impact of the water shortage to be identified.

For the early and mid-season varieties, the acreage irrigated with groundwater showed a 7.4% increase in yield while that subject to the water restrictions experienced a 27% decline in production from 2001 to 2002. For valencias, there was a 3.6% increase for the groundwater grove and a 5.6% decrease for the grove dependent on Lake Okeechobee. Grapefruit production increased by 22% on the grove without water use restrictions and decreased by 33% on the grove subject to the restrictions. The difference in yield between the 2001 crop and the 2002 crop for the groves under water use restrictions and those irrigated from groundwater was 34% for the early and mid season varieties, 9.2 % for valencias, and 55% for grapefruit.

Combining the information submitted by the growers indicates a per acre revenue impact of approximately \$630 per acre for early/mid season oranges and \$310 per acre for Valencias. The 55% reduction figure cited for grapefruit was based on only one report and was not considered statistically significant enough to use for the basin wide grapefruit acreage. For the purposes of this report, grapefruit impacts were estimated to be the same per acre as the Valencia oranges.

Estimating the regional impact to citrus. With only a limited number of growers providing economic information, the following methodology was developed to estimate the regional impact to the citrus growers affected by the water shortage:

The Gulf Citrus Growers Association collects data on the Caloosahatchee region's citrus industry and identifies grove acreage by crop type. According to their figures for 2001/2002, 88% of the acreage was in oranges (with 12 percent of that amount not in production because the trees were less than 3 years old). Of the remainder, 8% was planted in Grapefruit (with 5% of that area not yet producing). The remaining 4% was in other citrus crops. Applying these percentages to the 68,219 acres of citrus in the Caloosahatchee Basin served by the Lake yields 61,240 acres of oranges irrigated from the Lake with 54,260 in production during the water shortage. A similar exercise shows 4,430 acres of grapefruit with approximately 4,180 in production.

Since the early/mid season oranges suffered more severe impacts, the acreage of each was treated separately. Data provided by the Gulf Citrus Growers Association indicated that the production from early/mid season varieties made up 45% of the production while valencias accounted for 55%. Therefore, of the 54,260 acres of oranges in production, 24,380 are assumed to be early/mid season and 29,880 are assumed to be valencias. Table 1 summarizes the total lost revenue estimated for citrus variety in the Caloosahatchee basin. The total revenue impact is estimated to be \$25,917,000.

Table 1. Summary of revenue impacts to citrus growers in the Caloosahatchee Basin.

Crop	Acres in Production	Lost Revenue per acre	Total Lost Revenue
Early/mid oranges	24,380	\$630	\$15,360,000
Valencia oranges	29,880	\$310	\$9,262,000
Grapefruit	4,177	\$310	\$1,295,000
Calculated Losses to Citrus in Caloosahatchee Basin			\$ 25,917,000

The other large concentration of citrus acreage dependent on the Lake for irrigation is located along the St Lucie Canal. During the 2001 water shortage, the SFWMD estimated the citrus area in that basin at 47,575 acres. Another 12,000 acres were located northwest of the lake or in the L-8 basin in Palm Beach County. No specific production data are available for these areas. Based on grower communications during the drought, it appears that impacts in the Caloosahatchee basin were more severe than in other areas. Many of the groves in that basin are located several miles from the Caloosahatchee River and a significant fraction of the water made available to growers was lost during conveyance from the canal to the grove. This condition was not as difficult in the other basins. For the purpose of this report, it was assumed that the impacts to citrus production in the other basins was one half of the blended per acre impact calculated for the Caloosahatchee Basin and that the blend of citrus varieties and percent of the cultivated acres were the same. The data from **Table 2** yields a blended impact in the Caloosahatchee Basin of \$443 per acre. Therefore, a rate of \$221 per acre was used to estimate the revenue lost in the other citrus areas.

Table 2. Summary of revenue impacts to citrus growers in the Lake service area

Crop	Acres in Production	Lost Revenue per acre	Total Lost Revenue
Estimate for Other Basins	53,150	\$221	\$11,746,000
Calculated Losses to Citrus in Caloosahatchee Basin			\$ 25,917,000
Total Revenue Losses to Citrus in 2001/2002			\$36,663,000

Sugarcane. To obtain information on impacts to the sugar cane crop, the large growers in the area were contacted and asked to report any information on yield reduction associated with the 2001-2002 crop year. Although the water shortage occurred the previous year, the damage occurred to the crop growing during the critical months of the shortage, which were March, April and May of 2001. This crop was harvested in the fall and winter of 2001-2002. The data reported in **Table 3** includes almost 70% of the cane acreage cultivated during the water shortage. The 6.4 percent reduction in yield is comparable to that reported by the USDA Economic Research Service in its official 2002 Sugar and Sweetener Yearbook.

To determine the total economic impact, the average reduction in yield was calculated and applied to the total acreage in sugar cane. This results in an estimated loss to the cane crop of \$54 million (**Table 4**). All growers also incurred significant increases in operating costs associated with changes to irrigation practices necessitated by the water shortage restrictions.

Table 3. *Reductions in yield for the 2001-2002 crop year reported for various sugar cane operations affected by the Water Shortage Operations of the SFWMD.*

Company	Acres	Reduction in Yield (tons of cane / acre)	Reduction in Yield (%)
Reporting Unit A	71,457	2.37 tons	5.2 %
Reporting Unit B	70,000	1.93 tons	4.8 %
Reporting Unit C	64,189	1.18 tons	2.9%
Reporting Unit D	81,197	4.13 tons	12.6%
Single Company	11,258	3.19 tons	8.7 %
Single Farm	5,000	3.15 tons	9.5 %
Total Acres Reporting	303,101	Average Reduction in Yield	6.43 %

Table 4. *Estimated reduction in revenue attributable to the water shortage induced yield reduction in sugar cane for the 2001-2002 crop year.*

Total Acres in Cane	Total reduction in yield (tons)	Estimated Sugar Content	Estimated Raw Sugar Price (per pound)	Total Lost Revenue
445,000	1,126,374	12 %	\$.20	\$ 54,065,973

Other Crops and Costs

Several other important crops were also affected by the water shortage, including sod, sweet corn, other vegetables and rice. No specific lost revenue estimates are available for these crops. In the case of sweet corn and rice, several growers simply decided not to plant many areas in the spring of 2001. The acreage planted in rice was estimated by growers to be down by 25 to 50 percent. All growers cited increased costs for irrigation because of the need to mobilize special equipment and crews to comply with the limited availability of water. Several also identified increase pressure from certain pests and problems in following years due to the inability to flood fallow fields during the water shortage.

These other impacts could easily amount to \$5 million to the economic impact over the 723,000 acres of irrigated agriculture subject to the water use restrictions.

Summary

This report was an attempt to quantify the lost revenue to agriculture as a result of the water use restrictions imposed as part of the 2000/2001 water shortage. It is not meant to be a rigorous economic impact assessment, but rather an estimate of the financial impact farmers incurred because of the lack of water. The conclusion on the impacts to sugar cane growers is considered reliable based on the high percentage of the irrigated acreage that is covered by reports from growers and the fact that the total impact as a percentage reduction in production matches the annual crop report provided by the USDA. The data on the impact to citrus growers is less certain, because fewer growers supplied detailed estimates and the geographic diversity between the groves west of the Lake in the Caloosahatchee Basin and to the east along the St. Lucie Canal.

It is clear that the Water Shortage of 2000/2001, and the accompanying water use restrictions imposed on irrigated agriculture during the event, had a severe impact on both the revenue growers received and the additional costs to grow the crops under those conditions. While this report is based on an imperfect data set, it produces a credible estimate of approximately \$90,000,000 of economic impact due to lost revenue to growers. With the uncertainties associated with the estimating methodology and the available data, it seems appropriate to conclude that the total negative impacts associated with the water shortage were in range of \$75,000,000 to \$120,000,000.

Table 1. Summary of economic impacts to irrigated agriculture served by Lake Okeechobee.

Total Revenue Loss for 2001/2002 Sugar Cane harvest	\$54,066,000
Total Revenue Loss for 2001/2002 Citrus harvest	\$36,660,000
Revenue Loss to other crops in 2001/2002 and to all crops in 2000/2001 and 2002/2003	\$5,000,000
Revenue lost to processors for Sugar and Citrus	Unknown
Additional cost to operate during the water shortage	Unknown
Lost opportunity cost for rice and sweet corn in 2001	Unknown

LEHTINEN VARGAS & RIEDI
ATTORNEYS AT LAW
A PROFESSIONAL ASSOCIATION

October 8, 2004

Colonel Robert M. Carpenter
U.S. Army Corps of Engineers
701 San Marco Blvd. Room 372
Jacksonville, District 32207-8175

RECEIVED
OCT 12 2004
JACKSONVILLE DISTRICT
USACE

Via Fax and U.S. Mail; E-Mail; and Express Mail

Re: Objections by the Miccosukee Tribe of Indians to the Draft Environmental Assessment and Finding of No Significant Impact for Changes to the Lake Okeechobee Regulation Schedule and Water Control Plan

Dear Colonel Carpenter:

I. INTRODUCTION

The Miccosukee Tribe of Indians, whose members live in the Everglades, object to the Army Corps of Engineers (Corps) Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) dated September 10, 2004, which proposes the implementation of the Class Limit Adjustment (CLA) to the Lake Okeechobee WSE Regulation Schedule. The Tribe contends that the hastily prepared and confusing Draft EA on the Corps' proposed change to the WSE Regulation Schedule and Water Control Plan does not comply with the National Environmental Policy Act (NEPA), the Administrative Procedures Act (APA), the Endangered Species Act (ESA), the 5th Amendment to the U.S. Constitution, and the Corps' Trust Responsibility to the Miccosukee Tribe. The Corps' Draft EA/FONSI determines, without any scientific analysis or proof, that the "considered action would have no significant impact on the quality of the human environment and does not require an Environmental Impact Statement." It also prematurely concludes, again without proof and the required consultation with the Fish and Wildlife Service (FWS), that there will be no impact on endangered species. A review of the Draft EA, which appears to merely parrot the attached technical documents and presentations prepared by the South Florida Water Management District (SFWMD), shows no scientific analysis or support for the FONSI.

It is clear from a review of the Draft EA that the Corps' finding of no impact on the St. Lucie Estuary is based on a hunch; the impact on the Caloosahatchee Estuary is admittedly

unknown; the impact on the water conservation areas and water quality has not been adequately analyzed; and the impact on water supply has been brushed aside. The Tribe contends that the Corps can not make changes to the WSE Regulation Schedule and Water Control Plan for Lake Okeechobee without having completed the environmental reviews required under NEPA, the ESA, the APA, and without complying with its own regulations and its Trust Responsibility.

While the Draft EA/FONSI pretends that this will simply be a so-called “temporary deviation” to the Lake Okeechobee Regulation Schedule, the Tribe is well aware of the Corps’ charade. The “temporary deviation” charade went on for many years before your tenure, Colonel Carpenter, with the regulation schedule in the southern part of the system. The Tribe watched “temporary” and interim water management actions go on for seven years. Sadly, the damage these so-called “temporary interim” actions have had on the Tribe’s Everglades and its tree islands is permanent and ongoing. Indeed, it is the current Interim Operational Plan (IOP) which blocks the flows through the S-12 gates to the south, that is causing and contributing to the high water conditions to the north, including in the Lake. Moreover, not only the Tribe and its lands, but all citizens, are harmed by the Corps’ callous indifference to environmental laws when it makes these so-called “temporary deviations” without complying with federal law. The Tribe will not stand by and watch the Everglades, and these environmental laws, continue to be abused. Nor does it accept the assertion of a Corps’ representative at deposition that it has the right to destroy every tree island in WCA 3A under its current operations.

The Draft EA fails to recognize that the Water Conservation Areas are the Everglades. The line in the Draft EA at Section 1.2 that “The WCAs are areas managed for multiple purposes, but designed to receive and store water from adjacent areas, including Lake Okeechobee, fails to consider the environmental importance of the sawgrass Everglades, which Marjory Stoneman Douglas lovingly called the “River of Grass.” Nor, does the Draft EA acknowledge that both the Corps 404 permit for the Stormwater Treatment Areas (STAs), and the Settlement Agreement of the federal Everglades lawsuit, does not allow dirty water to be put into the WCAs with gay abandon, including into pristine areas in northern WCA 3A. The Tribe objected to the WSE in the past, because it increases the amount of polluted water being put into the Everglades. The CLA, which apparently increases the percentage of times the water can be put south from 62% to 75% when the Lake is at even lower levels adds insult to injury. Moreover, since there is absolutely no water quality analysis of the increased hydroperiod to WCA 3A north, which the Draft EA deems a “benefit,” it is difficult for the Tribe to know whether polluted water is being put into a pristine area where it should not go. We do know, however, that this is the type of analysis that must be conducted in an EIS.

Just as the Draft EA refers to the Water Conservation Areas as reservoirs, the Corps considers Lake Okeechobee a water management reservoir in the C&SF Project. The Tribe does not believe that either is right and is hopeful that the long awaited restoration projects will correct the damage being done both to the Everglades in the WCAs and the Lake ecosystem. The Tribe cares about all parts of the Everglades ecosystem which it has traversed for centuries, including the Lake. The Tribe does not believe, however, that Lake Okeechobee’s high water problems should be corrected at the expense of the Everglades and the estuaries. The problems with the

Everglades, its liquid heart, and the estuaries will be corrected as part of an ecosystem restoration. That is why the Tribe supports the expeditious implementation of projects such as the Modified Water Deliveries Project and the Comprehensive Everglades Restoration Plan (CERP). We cannot support band-aid "solutions" that play God with the Everglades and attempt to help some areas at the expense of others. It is time to stop pitting one part of the ecosystem against another. We must become systematic thinkers and implementers of the ultimate solution. The expeditious implementation of the Modified Water Deliveries Project, and ultimately CERP, are the only real solutions that will work for all parts of the ecosystem.

A. NEPA REQUIRES AN ENVIRONMENTAL IMPACT STATEMENT

As a review of the hastily prepared, and deeply flawed, Draft EA/FONSI demonstrates, the Corps is not taking the objective hard look required by the National Environmental Policy Act (NEPA). The Corps' proposed Class Limit Adjustment (CLA) to the Regulation Schedule for Lake Okeechobee is not a "minor fine tuning adjustment," as the Corps and SFWMD claim. The CLA is a change to the Regulation Schedule that is a major federal action that significantly impacts the human environment and requires an Environmental Impact Statement (EIS). The Corps has not claimed that an "emergency" to the public health and safety exists wherein compliance with NEPA is impossible. Thus, the Corps will violate NEPA if it fails to complete an EIS before implementing the CLA. It is the Tribe's understanding that the Corps also failed to comply with NEPA, and other federal laws, by implementing a prior "temporary deviation" to the WSE Regulation Schedule (Alternative 5) without conducting any environmental assessment at all. This operation of the water management system by whim and caprice must stop.

Indeed, the technical documents attached to the Draft EA show that the CLA will change the Water Control Plan and is an admitted starting point for significant modifications to the schedule which will require an EIS. (See August 14, 2004 Neidrauer letter at page 3 and WRAC Lake Okeechobee Workshop, June 28, 2004, at page 28.) As you know, but the SFWMD modeler may not know, it is illegal under NEPA to segment a project. The EIS must be conducted before the CLA is implemented. Moreover, the Corps' failure to conduct an EIS made it impossible to provide accurate information to the National Oceanic and Atmospheric Administration (NOAA) that was requested by letter dated May 6, 2004, concerning direct and indirect impacts to living marine resources. The Draft EA does not contain an adequate scientific analysis of the potential impacts to living marine resources, including mangroves, seagrasses, living bottom communities and the marine/estuarine water column that was requested.

Water Conservation Areas a/k/a The Everglades

"No look" does not mean "no harm." The Corps is legally required to analyze the impacts of the CLA, and all other reasonable alternatives, on the Everglades in the Water Conservation Areas. There is ample evidence that harm will occur. Such harm will be compounded by the interim water management operations that have drowned the Everglades in WCA 3A for seven years, and the WSE Regulation Schedule that has increased pollution. The Corps must do the legally required analysis to look for environmental impacts, including

cumulative impacts. The Florida Fish and Wildlife Conservation Commission (FFWCC) has raised concerns about negative impacts of the proposed change on the downstream areas. Its May 3, 2004, letter to the Corps specifically states that the, "Releases of water will have to be evaluated to ensure that they do not negatively impact downstream environments such as the Water Conservation Areas and the St. Lucie and Caloosahatchee Estuaries." This evaluation of downstream areas must be done in an EIS.

The blanket statement at page 22 of the August 17, 2004 Neidrauer letter (Appendix B) claims a slight improvement in the Everglades from CLA due to an extended hydroperiod in northern WCA 3A. There is absolutely no water quality analysis in the Draft EA of this increased water that would support such a finding. The Tribe does not consider more water, if it is dirty water, a benefit. The Draft EA also fails to conduct any analysis of how the increase in the opportunity to make Lake Okeechobee Zone D releases south to the WCAs by approximately 15% (from 62%-75%) will impact the environment in the WCAs. (See, August 17, 2004 Neidrauer memo, at page 2.) While this memo also claims on page 13 that Everglades hydroperiod and ecology would be slightly better, there is no scientific basis for this statement. Especially in light of the fact that the same page states that during April-July 2003, the CLA would have triggered an additional 4 weeks of releases to the WCAs. The Draft EA also contains no environmental analysis of the impacts that extending the frequency and duration of water releases to the WCAs will have on flora and fauna there, including tree islands.

The Estuaries

Similarly, the Draft EA fails to adequately analyze any adverse impacts that would result to the St. Lucie and Caloosahatchee Estuaries from doubling (from 17% to 34%) the releases to the estuaries. (Id.) There is absolutely no science in the Draft EA to support the conclusion that there will be no adverse impacts to the St. Lucie Estuary from making pulse releases to the estuaries for extended periods of time, especially in years when the hydrology would not cause the so-called "expected" large inflows. On page 7 of the Neidrauer memo, it admits that a trade off of the lower Lake level releases is that it "increases the occurrences of low and moderate, possibly stressful, estuary flows." The Corps is required to do an EIS to analyze this potential impact. The statement in the Draft EA at page 16 that "neither benefits or adverse impacts could be determined" for Caloosahatchee estuary does not mean "no environmental impact," it means that the Corps is required to do an EIS to find out if there is any impact. As the FFWCC stated in its May 3, 2004 letter to the Corps, the long-term impact of continuous low-level releases to the estuaries is hard to predict. The letter also states that continuous water releases may impact species that rely on having higher salinities in specific areas of the estuary during the dry season and that persistent low salinity may impact species, such as the oyster. It is the Corps' responsibility to conduct an EIS so that it can predict the impacts of its proposed CLA, and other alternatives, on the St. Lucie and Caloosahatchee estuaries.

Modeling Is No Substitute for Scientific Analysis

Using only modeling simulations, rather than scientific data and analysis, to reach

unsupported assertions in the Draft EA/FONSI about the impact that the CLA will have on the human environment does not comply with NEPA.

Inadequate Alternatives Analysis

The Draft EA fails to include an analysis of reasonably foreseeable alternatives that would be less harmful to the Everglades and the estuaries. For instance, it fails to include the expeditious completion of the Modified Water Deliveries Project as a viable alternative. Indeed, this is the only reasonable alternative in the short term that will help alleviate the Lake's high water problems and will not pit one part of the ecosystem against another. The Corps must analyze all reasonable alternatives, including the Modified Water Deliveries Project, in an EIS before implementing the proposed change the WSE Regulation Schedule.

Potential Water Supply Impacts

The Draft EA/FONSI also fails to analyze the concern voiced in the scoping process that the CLA would increase the possibility of a drought and water supply restrictions. For instance, Miami-Dade County is concerned that early releases and a subsequent lower lake level could create a water shortage situation. The Tribe remembers well how the SFWMD's lowering of the Lake in the past resulted in a manmade drought that caused severe economic problems for businesses around the Lake and others on the coast. The technical documents attached to the Draft EA show that the CLA could increase the frequency of water shortages and water restrictions, which could include Miami-Dade County. The potential to increase water shortages and water restrictions, which could negatively impact the wellfields, must be analyzed in an EIS.

Hurricanes and Public Health and Safety

The back-to-back hurricanes that recently occurred show how important it is not to maintain have high water levels in the system, including the WCAs, when a storm or hurricane hits. The IOP, which maintains high water levels in the Everglades WCAs can curtail, or eliminate, the ability to put water in these areas in a hurricane and exacerbate flooding. It is vital to the public health and safety, and the integrity of the structures in the WCA s, that the Corp analyze the potential impacts that the changes to the WSE Regulation Schedule, coupled with the IOP, could have on the structural integrity of the structures and levees in the WCAs and the public health and safety should a hurricane hit.

Cumulative Impacts

Finally, the Draft EA/FONSI fails to analyze the cumulative impacts of the proposed action along with the impact that other past, present and future actions such as the Interim Operational Plan (IOP), will have on the human environment, the Everglades and the estuaries. NEPA requires the Corps to analyze cumulative impacts of all of its water management actions.

B. THE CORPS MUST COMPLY WITH THE APA

The Corps is required to follow the Administrative Procedure Act (APA), its own rules and regulations, and proper rulemaking procedures when making changes to the Regulation Schedule and Water Control Plan for Lake Okeechobee. A review of the Draft EA technical documents shows the CLA changes the current rules and regulations for Lake Okeechobee and constitutes an amendment to the rules and regulations for operating the project. The Tribe vehemently opposed the WSE Regulation Schedule in the past because of the harm it would do to the Tribal Everglades. It now appears that those who pushed for the WSE Regulation Schedule, no longer believe that it has helped the Lake and want the Corps to change it again, despite the impact it could have on the Everglades and the estuaries. The Corps can not change the WSE Regulation Schedule without following the procedure required by law and its own regulations that govern such changes.

C. CORPS MUST COMPLY WITH THE ENDANGERED SPECIES ACT

The Draft EA/FONSI fails to follow the consultation and coordination requirements required by Section 7 of the Endangered Species Act (ESA). The Corps is well aware that there are numerous threatened and endangered species in the project area, including the snail kite and its critical habitat in WCA 3A, and the manatee and sea turtles in the estuaries. It is vital for the Corps to formally consult with the FWS on the potential impact that the CLA will have on endangered and threatened species in the project area. The ESA requires that a Biological Assessment be prepared as part of the interagency consultation process to analyze whether the proposed actions are likely to jeopardize the continued existence of endangered species. The Corps must not implement the proposed changes to the WSE Regulation Schedule prior to completion of formal consultation on all endangered and threatened species that could be adversely affected by the proposed action. NEPA also requires the Corps to release an EIS with this information for public review. Finally, the ESA requires the Corps to look at cumulative impacts of the proposed action, along with all past, present, and future water management actions (including IOP) prior to implementation of the CLA.

D. THE CORPS MUST COMPLY WITH THE INDIAN TRUST DOCTRINE

The Corps owes the Miccosukee Tribe of Indians a sacred trust obligation and fiduciary duty to protect Tribal lands, resources, and assets pursuant to the Federal Indian Trust Doctrine. The Corps has never formally consulted with the Tribe about the prior, or proposed, change to the WSE Regulation Schedule. This is disconcerting since the technical document in the Draft EA shows that the CLA will increase the frequency of times that water would be allowed to go to the WCAs. While the Draft EA claims that WCA 3A north will benefit from the CLA by increasing the hydroperiod, there is absolutely no analysis of whether polluted water will be put into an area that is now relatively pristine. Both the Settlement Agreement in the federal Everglades lawsuit, which the Tribe has the right to seek to enforce, and the Corps 404 permit on

the STAs, does not allow the pristine areas in northern WCA 3A to be rehydrated with dirty water. Additionally, the Tribe has a perpetual lease in a large area of WCA 3A that promises that the Everglades there will be preserved in a natural state. The Tribe is opposed to the Corps implementing the CLA until the impact on the Everglades, which is vital to the Miccosukee Tribe's culture and way of life, is fully analyzed in an EIS. The Corps has a solemn Trust Responsibility to protect the Tribe and its lands. It is disconcerting to the Tribe, that the Draft EA/FONSI states at page 22, without any analysis or comment on the Tribe and its lands in the project area, that this change to the WSE Regulation Schedule will not impact Native Americans. The Corps has a duty to analyze the impact the change in the WSE Regulation Schedule and Water Control Plan will have on the Tribe and its Everglades homeland.

E. CORPS MUST COMPLY WITH THE 5TH AMENDMENT

The Corps' implementation of the proposed CLA change to the WSE Regulation Schedule and Water Control Plan for Lake Okeechobee, without complying with federal law, will adversely affect life, liberty or property without due process of law.

II. CONCLUSION


The Army Corps of Engineers must comply with NEPA, the ESA, the APA, the Indian Trust Doctrine, and the 5th Amendment to the U.S. Constitution before implementing the proposed CLA change to the WSE Regulation Schedule and Water Control Plan for Lake Okeechobee. The Corps' legally insufficient Draft EA/FONSI fails to analyze the implementation of the proposed CLA alternative, which must be subject to an EIS. It is clear from the shallowness of the document, which merely parrots the views of the SFWMD, that it does not comply with NEPA, the APA, or the ESA. It has become abundantly clear to the Tribe that rather than comply with NEPA and the ESA prior to taking action as required by law, the Corps has learned to shield its non-compliance under the mantle of environmental protection for some areas. Such an artful charade is not what Congress intended when it passed these hard won environmental laws.

Environmental laws must be followed. The failure to do so will result in hastily devised and harmful plans which violate people's rights and ignore laws designed to protect the environment. The Corps' legally insufficient Draft EA/FONSI does not advance the goals of environmental protection. Equal environmental protection will only be advanced through compliance with environmental laws. In short, the Corps is required to conduct an EIS and an ESA consultation, prior to implementing the CLA change to the WSE Regulation Schedule and Water Control Plan for the WSE Regulation Schedule.

The Tribe warned the Corps many years ago that the delay of the Modified Water Deliveries Project had placed it in a position of playing God with the Everglades, deciding which parts of the Everglades will be protected and which will be destroyed. This Animal Farm Equality for the Everglades can not go on if we are to have any Everglades left to restore. We ask the Corps to abandon these band-aid fixes and take immediate steps to see that the Modified

Water Deliveries Project is implemented and CERP moves forward. We heartily support your commitment to completing the Modified Water Deliveries Project, Colonel Carpenter. The Tribe has long contended that the expeditious implementation of Mod Waters, which will help restore more natural flows through the Everglades, will help relieve high water problems in the Water Conservation Areas, Lake Okeechobee, and the estuaries. It will also protect the endangered and threatened species in these areas, and help ensure water supply and flood protection for urban and agricultural areas. The Tribe does not support these so-called "temporary deviations," which only pit one part of the environment against another and make a mockery of environmental laws. We stand ready to assist you should you decide to move forward on long term solutions, such as the Modified Water Deliveries Project and CERP, but will continue to resist continued efforts on the part of the SFWMD and the Corps to make changes to the WSE Regulation Schedule without conducting an EIS and complying with other federal law.

Sincerely,

A handwritten signature in black ink, appearing to read "Dexter W. Lehtinen", written in a cursive style.

Dexter W. Lehtinen



THE EVERGLADES COALITION

October 29, 2004

1000 Friends of Florida
Arthur R. Marshall Foundation
Audubon of Florida
Audubon Society of the
Everglades
Broward County Audubon
Society
Clean Water Action
Clean Water Network
Collier County Audubon
Society
The Conservancy of Southwest
Florida

Defenders of Wildlife
Earthjustice
Environmental & Land Use
Law
Center

The Environmental Coalition
Environmental Defense
Everglades Coordinating
Council
Florida Defenders of the
Environment

Florida Keys Chapter of the
Izaak Walton League of
America
Florida Keys Environmental
Fund
Florida Public Interest Research
Group

Florida Sierra Club
Florida Wildlife Federation
Friends of the Everglades
Izaak Walton League of
America
Last Stand
Legal Environmental Assistance
Foundation
League of Woman Voters of
Florida

Loxahatchee River Coalition
Mangrove Chapter of the Izaak
Walton League of America
Martin County Conservation
Alliance

National Audubon Society
National Parks Conservation
Association

National Wildlife Federation
Natural Resources Defense
Council
North Carolina Outward Bound
School

The Ocean Conservancy
The Pegasus Foundation
The Redland Conservancy
Sierra Club
Sierra Club Broward Group
Sierra Club Loxahatchee Group
Sierra Club Miami Group
Tropical Audubon Society
The Urban Environment League

James C. Duck, Chief, Planning Division
US Army Corps of Engineers
PO Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

On behalf of the 45 members of the Everglades Coalition, we support initiation of an Environmental Impact Statement (EIS) for the "Lake Okeechobee Regulation Schedule, Water Supply and Environment" (WSE) because the draft Environmental Assessment (EA) could do more to protect the natural environment of Lake Okeechobee and the estuaries. The devastating effects of the hurricanes highlight the need to take short (EIS) and long-term (CERP) management actions to facilitate the regeneration of the ecological communities of the Lake and the estuaries.

The proposed EA should encourage adequate Lake discharges when a prolonged high stage is detrimental to the Lake's ecological health. The Class Limited Adjustment (CLA) modifications should include more flexibility in the decision tree to allow for proactive releases. The decision tree should also enable staff to take into account environmental conditions in the system, so that operations can allow for real time decisions. We urge you to include the Adaptive Protocols that the Coalition previously supported that could further this type of adaptive management.

The needs of the Caloosahatchee River should be more adequately addressed by the proposed EA. The estuary should not be allowed to suffer MFL violations during times when no other user is being rationed. The WSE should include more shared adversity so that the Caloosahatchee can meet its MFL. During the wet season the CLA should address damaging flows to the estuaries.

An EIS is necessary in order to include a discussion of threatened and endangered species. This is particularly important with the Lake's designation as critical habitat for the federally endangered Snail Kite. Snail Kite numbers have been decreasing throughout Florida and Lake Okeechobee itself has only had one successful nest in four years.

The Coalition urges the Corps to undertake an EIS process, which can fully address the many problems of WSE. We look forward to a more in-depth evaluation of the protections for the natural and human environments.

Sincerely,

David Bogardus
Lake Okeechobee Team Leader
Program Officer
World Wildlife Fund

cc: Henry Dean, SFWMD





REC'D
2 Nov 04

Lake Okeechobee Watershed Program
PO Box 707
Lorida, FL 33857
Tel: 863-655-1831
www.audubonofflorida.org
Audubon@Okeechobee.com

October 28, 2004

James C. Duck, Chief, Planning Division
US Army Corps of Engineers
PO Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

These comments concern the draft "Environmental Assessment to the Lake Okeechobee Regulation Schedule, Water Supply and Environment (WSE), Lake Okeechobee, Florida" (EA). This EA was undertaken in recognition that the WSE schedule has shortcomings, one of which is that WSE "...may not allow for lake discharges even when a prolonged, moderately high stage is detrimental to the lake's littoral zone and ecological health" (p. 2). The South Florida Water Management District (SFWMD) previously analyzed several schedule modifications and the "Class Limit Adjustment" modification (CLA) was chosen by the Corps for further scrutiny in this EA.

The EA states on page 14 that CLA is "...a minor fine-tuning adjustment" to WSE. We concur with that assessment and note that with CLA, Lake Okeechobee still tends to stay harmfully deep. CLA keeps Lake Okeechobee an estimated 0.84 feet from the Stage Envelope Performance Measure (see page 9 of Appendix B), which measures the average deviation from water levels that are considered healthy for the lake. This is a negligible improvement over WSE, which averages about 0.95 feet from desirable levels (less than an inch difference).

The greatest problem with WSE however, has been a lack of flexibility in implementing weekly decisions. Appendix C of the original WSE EIS (1999) had a thoughtful discussion of when to override the WSE recommendations, noting that the decision tree is inherently limited and several kinds of weather patterns can "trick" the decision tree into making poor recommendations. The SFWMD also compiled an "Adaptive Protocols for Lake Okeechobee Operations" that further recommended adaptive management of the Lake, based partly on real-time observations of environmental conditions in the system that are not included in WSE's decision tree. In spite of these efforts, management was not adaptive, the decision tree did get "tricked" by weather, and a formal deviation from WSE had to be made in 2003-2004 to attain desired water levels for lake health and estuary protection. In the spring of 2004, the SFWMD and USACE very skillfully lowered a deep Lake Okeechobee during the dry season, avoiding negative impacts to the estuaries and without affecting water supplies. Although this action was extremely beneficial to the lake's health, and increased storage potential that improved flood control abilities before the hurricane season, this lowering was not called for in WSE, and would not have been triggered with CLA (see page 14 of Appendix B).

Looking back on the wet summer of 2004, it is quite fortuitous that WSE was over-ridden, and we began the summer at relatively low lake levels. In a few months, Lake Okeechobee's water volume increased by more than 2.4 million acre-feet and lake levels jumped 5.5 feet (from about 12.5 feet to 18 feet). Had Lake Okeechobee started the summer at about 15 feet, as it did under WSE in 2003, the Hoover Dike would have been severely challenged, and genuine disaster might not have been avoidable. Unfortunately, even with CLA, WSE still will allow the rather perilous condition of Lake Okeechobee beginning the summer rainy season at elevations of 15 feet or greater, when weather allows.

To help the public assess the relative risks of beginning the wet season at different lake levels, this EA should include figures graphing probabilities of reaching various lake levels during the wet season from each 6 inch interval of lake level (e.g., 13 foot, 13.5 foot, 14 foot, and so on). These could be identical to the water supply position analysis percentile graphs found on the SFWMD Lake Okeechobee Operations WSE implementation web page, using June 1 as the beginning date and assuming "average" water conditions prior to that date (e.g., http://www.sfwmd.gov/org/pld/hsm/reg_app/opln/PA/01JUN2004/UPA/sfwmm_quan_1274.pdf).

Threatened and Endangered Species

This section of the EA should be greatly expanded. Snail Kites have been all but eliminated from Okeechobee's marshes (Table 1). During its admittedly short implementation, WSE has not shown marked improvement in Lake Okeechobee's ability to fulfill its designation by the USFWS as Critical Habitat for the federally endangered Snail Kite.

Year	Number of Snail Kite nests detected
1996	34
1997	4
1998	8
1999	0
2000	0
2001	0
2002	0
2003	5 (only one nest successful)

Snail Kite populations have been plummeting throughout Florida during this period, increasing the need for Lake Okeechobee to function for Kites. In the "Snail Kite Demography annual report" prepared in 2003 for the USFWS Vero Beach Field Office by Julien Martin, Wiley Kitchens, and Michaela Speirs of the University of Florida, it was stated that,

"The results presented in this report, suggest that the snail kite population in Florida is going through an alarming declining phase. In particular, the population size of snail kites in Florida appears to have progressively and substantially decreased since 1999. In 1999 the kite population was estimated at 3577 individuals, whereas in 2003 this estimate had dropped to 1610 individuals."

Further,

"However, we can confidently assert that Lake Okeechobee which was previously one of the most productive breeding sites of the system (from 1985 to 1995), has been severely altered, to the point that almost no fledglings have been produced since 1996 (Figure 3). Lake stages have been either too high or too low to sustain viable breeding habitat conditions post-1996. Lake Okeechobee was a critical "hub" to the network of habitat for foraging and nesting in the early 1990's (Bennetts and Kitchens 1997)."

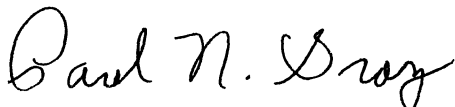
The EA does not discuss Snail Kites other than unsupported statements such as "no impact" (Table 1, P. 6), or "This alternative would not adversely impact endangered or threatened species under the jurisdiction of the USFWS or the NMFS" (p. 17). Adding these data to the EA would greatly strengthen the argument that CLA-type adjustments are genuinely needed, and will help demonstrate to the public that the agencies are aware of this situation and working to improve conditions for endangered species.

A notable continuing concern is the Caloosahatchee Estuary, which suffers MFL violations in about 1/3 of all months, with or without CLA. No other user has water shortages more than about 10% of the time in WSE, with or without CLA, therefore this remains a great inequity. It is even more troubling when one considers there will be periods using CLA when all users will get 100% of their needs met at the same time WSE calls for zero releases to the estuary.

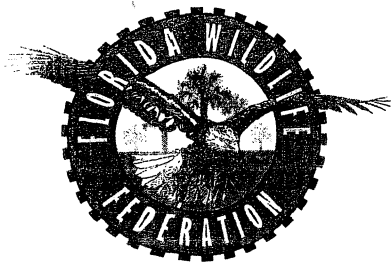
The Caloosahatchee River problem is yet another example of WSE's many significant problems that are not being addressed in this EA, or by CLA. Phase IV of the Corps process is to begin a new EIS to develop an improved regulation schedule for Lake Okeechobee. Considering CLA offers such minor improvements to system health, and leaves many concerns un-addressed, the new EIS should be an extremely high priority.

In summary, Audubon supports the CLA for WSE because it appears to have promise to lower average Lake Okeechobee water levels slightly. The difference however, is relatively small and still will allow certain weather patterns to keep Lake Okeechobee harmfully (and potentially dangerously) deep. Appendix B of the EA has 4 recommendations (page 14) that could further improve performance of WSE and Audubon recommends the Corps adopt them as part of the CLA deviation. Due to the limitations of the CLA deviation, the new EIS should be the top priority.

Sincerely,



Paul N. Gray, Ph.D., Science Coordinator
Lake Okeechobee Watershed Program



FLORIDA WILDLIFE FEDERATION

Affiliated With National Wildlife Federation

Manley K. Fuller, III, President
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Received PD-E

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October 28, 2004

Mr. James C. Duck, Chief
Planning Division – Environmental Branch
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

RE: Comments from Florida Wildlife Federation on ACE Preliminary Finding of
No Significant Impact: Temporary Planned Deviation to Adjust Classifications of
Hydrologic Indicators and Forecasts (CLA) – Lake Okeechobee Regulation
Schedule, Water Supply and Environment (WSE)

Dear Mr. Duck:

The Environmental Assessment for proposed modifications to the current Lake Okeechobee Operations Schedule (WSE/CLA) is silent about its adverse effects on critical habitat of the endangered Everglades snail kite. It is not appropriate to ignore new scientific information about phosphorus concentration in Lake Okeechobee and its effects on eutrophication of the Lake Okeechobee marsh. Florida Wildlife Federation believes that use of WSE/CLA will continue an ongoing process leading toward extirpation of the Everglades snail kite.

Run 25, WSE and WSE/CLA are a series of minor modifications to the 1978 Schedule. This schedule and its successors greatly increased the depth, duration and frequency of marsh flooding compared to pre-1978 conditions. This, combined with recent increases in lake phosphorus, has increased the rate of marsh eutrophication to the extent that the 1978 US Fish and Wildlife Service Biological Opinion about consequences to snail kite habitat no longer applies. When the Corps compares WSE/CLA to the WSE Schedule, it implicitly relies on an outdated Biological Opinion. Consequently, the Corps finding of no significant impact for WSE/CLA is erroneous.

USFWS has designated the entire 100,000-acre western marsh of Lake Okeechobee as critical habitat for the endangered Everglades snail kite under the Endangered Species Act. The snail kite lives almost exclusively on apple snails and feeds on the wing. To remain suitable habitat for snail kites, the marsh must not only support apple snails, but also maintain emergent vegetation at a density that allows in-flight feeding. Marsh eutrophication will ultimately render marsh water quality and its plant community unsuitable as apple snail habitat and unsuitable for snail kite feeding.

Like its predecessors, the depth, duration and frequency of marsh flooding produced by the WSE/CLA Schedule will continue ongoing marsh eutrophication. Deep-water reduces light penetration, which weakens and kills submerged and emergent plants. Deep water allows wind driven waves to propagate from the open lake into the marsh. Waves uproot plants, leaving them to decay in rotting piles. Wind driven waves also push lake water containing high phosphorus into the marsh. High phosphorus and rotting plants cause eutrophication. As sediment phosphorus concentration increases, vegetation shifts to dense cattails, which are unsuitable habitat for apple snails and snail kites. This kind of change occurs quickly, but is only slowly reversed. By the time the State of Florida controls watershed phosphorus or creates storage reservoirs that reduce marsh flooding, this critical snail kite habitat in the Lake Okeechobee marsh is likely to be destroyed in a way that cannot be reversed for several decades.

If the Everglades snail kite is extirpated in the meantime, it will be the result of the way the Corps chooses to operate Lake Okeechobee as a reservoir. Florida Wildlife Federation believes this choice is contrary to the Endangered Species Act.

The Federation also believes that the Corps' choice to continue the deep-water storage of the Operations Schedules of 1978, Run 25, WSE and WSE/CLA creates an unnecessary imbalance in management for Project Purposes. The Corps has never performed an independent analysis of the Local Sponsor's computer simulated projections of water supply demand. The Federation believes that the Local Sponsor's model is biased toward a very high level of storage. If the Corps were to rely on its own expertise, it is likely to find that the volume of storage requested by the Local Sponsor is unreasonably high.

The Corps' current thinking about balancing Project Purposes is based on the unproven premise that the Local Sponsor's demand for storage is necessary and reasonable. If this is untrue, the Corps has *misbalanced* project purposes in its Lake Okeechobee Operations Schedules in a way that continues to cause serious and entirely unnecessary harm to fish and wildlife habitat, harm to the recreation that depends on this habitat and harm to the economy that depends upon that recreation. This unexamined premise helps few, if any, and harms many. The Federation urges the Corps to thoroughly examine it.

While these investigations are taking place, the Federation recommends that the Corps continue using the temporary schedule deviations proposed for WSE/CLA.

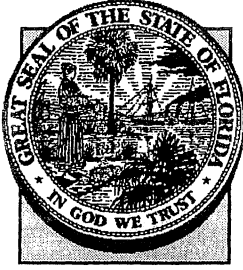
Sincerely yours,



Manley K. Fuller, III
President



Paul C. Parks, Ph.D.
Lake Okeechobee Project Director



Florida Department of Agriculture & Consumer Services
CHARLES H. BRONSON, Commissioner

Please Respond to:
Office of Agricultural Water Policy
P.O. 24680
3301 Gun Club Road
West Palm Beach, FL 33416

October 28, 2004

Ms. Yvonne Haberer
Planning Division, Environmental Branch
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Ms. Haberer:

The Florida Department of Agriculture and Consumer Services (FDACS) appreciates the opportunity to provide comments to the Corps on the September Draft EA for the Temporary Planned Deviation to the Lake Okeechobee Regulation Schedule Water Supply and Environment (WSE). The Department is interested in supporting modifications to the operating rules for Lake Okeechobee allowing more flexibility as long as the effect on water supply to agriculture is not impaired.

The draft document does not contain sufficient information to make the determination that there will be "no significant impact" to either agricultural water supply or the ability of the stormwater treatment areas (STA's) to meet the requirements of the Settlement Agreement. The Lake Okeechobee simulated stage (figures 4, 5 and 6) show that the Class Limited Adjustment (CLA) recommended alternative will likely result in lower lake stages during droughts. When lake stages are lower, less water is delivered to the growers under the supply-side management program. The impact of more severe droughts, less water delivered, on the growers in the Lake Okeechobee Service Area has not been evaluated. Until there is an assessment of the economic impacts during the more severe droughts, a determination can't be made of the significance of the impacts predicted by the modeling. The Department would like to review an assessment on the impact of more severe droughts before committing to support the CLA.

The water quality section of the analysis addresses potential benefits to Lake Okeechobee and estuarine water quality, but does not consider the effects of increased (10-15%) releases to the south on the performance of the stormwater treatment areas (STAs) or phosphorus loading to the Everglades Protection Area. STA performance has been impacted in the past by Lake Okeechobee regulatory releases and has resulted in problems with meeting the requirements of the Settlement Agreement. The Corps should look at the effects of the southern diversions on STA performance and other potential water quality impacts.

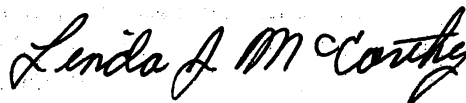
Ms. Haberer
October 26, 2004
Page Two

It is unclear how long the "temporary planned deviation" will be in effect since there is no time period recommended in the draft document. The language in section 1 calls the proposed action "an easily implemented modification" and a "refinement", implying that it will not be temporary. A drought is likely to occur while this proposed operational modification is in effect and before a more detailed study with a full EIS could be completed. Revisions to the SFWMD's Water Shortage Plan, Supply-Side Management and implementation of forward pumping would have to be considered and evaluated as part of this planned action in order for impacts to agriculture to be minimized during lower lake stages.

If you have any questions or I can assist in any way, please feel free to call me at 561- 682-2845. We would be happy to participate in any future collaborative efforts to develop operational plans in this region.

Sincerely,

CHARLES H. BRONSON
COMMISSIONER OF AGRICULTURE

A handwritten signature in black ink, reading "Linda J. McCarthy". The signature is written in a cursive, flowing style.

Linda J. McCarthy
Water Policy Liaison

cc: Chuck Aller, FDACS
Ray Scott, FDACS
Dennis Duke, USACE
Tom MacVicar



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

October 15, 2004

Ms. Yvonne Haberer
Planning Division
Environmental Branch
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Ms. Haberer:

The South Florida Water Management District (District) is providing the following review of the Draft Environmental Assessment Lake Okeechobee Regulation Schedule, Water Supply and Environment Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts, dated September 10, 2004. As local sponsor of the Central & Southern Florida Flood Control Project (C&SF), the District supports the selected alternative, Class Limits Adjustment (CLA), as it adds additional flexibility to Lake Okeechobee operations. This year we witnessed great benefits to the lake's littoral zone and the flora and fauna of the Caloosahatchee and St. Lucie Estuaries due to sound adaptive management of the lake.

During the review of the document, some general areas of clarification were noted. District staff suggest that the document be modified to clearly delineate between releases that are governed by the proposed regulation schedule temporary deviation from those that are made under the State's water supply authority. It would be helpful to include a calculation of the increased water volumes, and associated phosphorus loading, in water deliveries to the south under the CLA option. Additional detailed comments are attached.

We look forward to working with the Corps on this important project.

Sincerely,

A handwritten signature in black ink, appearing to read "Chip Merriam", is written over the word "Sincerely,".

Chip Merriam
Deputy Executive Director
Water Resources

Attachment

- c. Henry Dean, SFWMD
- George Horne, SFWMD
- Alvin Jackson, SFWMD
- Tom Olliff, SFWMD
- SFWMD Governing Board Members
- Carol Wehle, SFWMD
- Sheryl Wood, SFWMD

GOVERNING BOARD

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Kevin McCarty
Harkley R. Thornton
Trudi K. Williams, P.E.

EXECUTIVE OFFICE

Henry Dean, *Executive Director*

1. Section 4.14, para 1, 2nd sentence: change "National System Model" to "Natural System Model"
2. Engineering Report (Appendix B, page 10, Table 4): Numbers for demand not met for CLA are transposed (see the correction below). The WRAC presentation slide on page 118 of the draft EA shows the correct values. This is a minor, but potentially question-evoking, mistake.

Table 4. Lake Okeechobee Service Area Water Supply Assessment

Simulation	Total(36yr) SSM Cutbacks (1000af)	Additional SSM cutbacks over Base (1000af)	Water Yrs with SSM cutbacks >100,000af	Water Yrs with SSM cutbacks >350,000af	EAA % of Demands not Met	Other LOSA % of Demands not Met
Base	1,442		4	0	8%	6%
CLA	1,640	198	4	0	7%9%	9%7%

3. In Table 1, it is indicated that for Aesthetics, CLA will have benefits, whereas No Action will have no impacts. This is not correct. Since the attribute mentioned (algal blooms) presently occurs at harmful levels, then taking No Action would be detrimental to the lake if CLA can reduce bloom frequency.
4. In Table 1, Water Supply and Flood Protection are said to have 'no measurable impact' under CLA, versus 'no impact' under the No Action alternative. If something cannot be measured because it is too low, then that is the same as no impact.
5. On page 9, in the paragraph about Lake Okeechobee, all of the text about exotic plants should be omitted – it is entirely out of context.
6. On page 14, in the second full paragraph, there are two contradictory statements. First it is said that adjustments to WSE 'may not be beneficial' to all management purposes, and later it is said that the adjustments may have 'lesser benefits.' The first statement is the correct one. Please reword so to avoid misleading readers who might think it is possible to adjust the schedule and have benefits for all purposes.
7. On page 15, Havens et al. 2004b is cited. Two things – first, please spell Havens correctly. Second, please add the 2004a citation somewhere before this one. The best place to insert the citation for Havens et al. 2004a would be right after the words 'essential spawning and foraging habitat.'
8. On page 16, in the paragraph below the table, it says that the CLA simulation for the Caloosahatchee is 'difficult to evaluate'. Recommend saying instead that the 'results are complex.'

9. Page 17, item 4.3.1 -- perhaps something can be said about the federally-endangered Everglades Snail Kite. The seasonal stage variation performance measure for the lake was developed with input from FWS scientists, including a Snail Kite expert. Improved performance for this measure is known to be consistent with better conditions for Snail Kites in the lake's littoral zone.
10. The modeling suggests an increase in water delivered to the WCAs (from 64% to 75% if I recall correctly). STA-3/4 is the only STA designed to capture and treat lake regulatory releases. Key point here is, in general, only STA-3/4 should be considered for regulatory releases. Obviously, case-by-case situations might arise that could consider other STAs. Also suggest that the analyses track phosphorus loads (in addition to water volume) to ensure impacts to the Everglades could be understood.
11. Need to make a correction on page 43, Appendix A, where the description of the District's authority under Chapter 373 states that Chapter 373 provides no authority related to the proposed action. Under Chapter 373 authority, the District is the local sponsor of the C&SF Project and is bound by the federal regulations regarding operation of the project. Also, under Chapter 373 the District operates the C&SF Project for water supply purposes.

Haberer, Yvonne L SAJ

From: Clewiston Chamber of Commerce [clewistonchamber@earthlink.net]
Sent: Wednesday, November 03, 2004 9:39 AM
To: Haberer, Yvonne L
Cc: Mali Chamness
Subject: Lake Okeechobee WSE

Our Hendry County Tourist Development Council met last night and Susan Sylvester of your command did a conference call with our Council. We are appreciative of her assistance in understanding the matter. Our Council was not happy with the fact that none were aware of the Public Hearings and were further not happy with the fact that no public hearing was held in Clewiston. Clewiston is truly the only city on Lake Okeechobee that is daily impacted by the water levels of Lake Okeechobee. As you know, a lock facility exists in Clewiston, unlike any other city on the lake. When water levels are high, the locks must be closed and this has a severe economic impact upon Clewiston..it affects our commerical fishermen, our marinas and our visitors. We understand that only a few people appeared at the meeting held in Okeechobee and that's logical. The impacts on other cities is more long term while the impact of high water on Clewiston is immediate. Further, we are urging that you remain on a steady course for getting Lake Okeechobee down to the prescribed "above sea level" parameters (13 1/2 ft to 15 1/2 ft). We understand that groups concerned about coastal estuaries are worried about continued releases from Lake Okeechobee. We inland Floridians also value those estuaries as we frequently visit them for recreation and vacation purposes. Yes, those estuaries are treasures. But, Lake Okeechobee is also a treasure...in fact a National treasure. When our water levels get beyond the 15 1/2 ft levels, we immediately start losing the native grasses that are so important to the wildlife and fish habitat and water quality. The only way for most of those grasses to regenerate themselves is for a drought to dry out part of the lake bottom...as happened two years ago. Please remember our lake's ecology...the ecology of estuaries can be repaired quicker through other cycles but the ecology of Lake Okeechobee take much longer of periods, and other rare events, to recover. Thanks for your interest. Jeff BARwick, Executive Director of Clewiston Chamber of Commerce

Outgoing mail is certified Virus Free.

Checked by AVG anti-virus system (<http://www.grisoft.com>).

Version: 6.0.788 / Virus Database: 533 - Release Date: 11/1/2004

U.S Fish and Wildlife Service Comments
on
Draft EA for Lake Okeechobee Regulation Schedule, WSE, Temporary Planned
Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts

Introduction

The Service has a long history in reviewing proposals to modify regulation schedules for Lake Okeechobee. The intent of the current proposal is to slightly adjust the classification of tributary conditions and climate outlook to allow more frequent Level 1 pulse releases to the St. Lucie and Caloosahatchee estuaries when the lake is in Zone D of the regulation schedule (Class Limit Adjustments, CLA). We have attended several public meetings explaining the intent of this proposed change and the results of models projecting the potential effects.

We find that given the present infrastructure around the lake, water managers are unable to avert the most extreme high and low water conditions that cause significant ecological harm. The slight changes proposed here to the existing WSE schedule can only affect decisions under the moderate conditions of Zone D, and decisions of this type have small effects on the tradeoff of relative improvements to the ecology of the lake's littoral zone, conditions in the estuaries, the Everglades, and water supply. Although we agree that the changes are slight, we believe that the public disclosure in the EA would be more accurate if the Corps acknowledged that the proposed changes would "nudge" the balance of these tradeoffs in the direction of slightly improved conditions in the lake's littoral zone, while providing slightly less favorable conditions in the estuaries, particularly the Caloosahatchee.

General Comments on Effects to the Estuaries

Overall, this document downplays the effects that increased high flow will have on the Caloosahatchee and St. Lucie estuaries. Some parts of the EA state that the CLA "... reduces the occurrences of high damaging estuary flows ..." when the data shown in the accompanying tables dispute this statement. The performance measures that have been developed by RECOVER for the estuaries has flow categorized as "low", "normal", "high" and "very high." The "high" flows are defined as being stressful to the estuarine communities, and the "very high" flows are damaging to these communities. This EA refers to the RECOVER "high" flow as "moderate" flow, and to the RECOVER "very high" flow as "high" flow, thereby reducing the apparent effect that the CLA will have on flows to the estuaries.

The performance measures have four categories of "high flows", two for St. Lucie and two for Caloosahatchee. Of these four measures, the performances of three of them are worsened with the CLA scenario (one for St. Lucie, and both for Caloosahatchee). Yet the EA states that "The CLA improves the likelihood of making smaller releases more often, as opposed to stressful high damaging estuary releases." This statement seems intuitive, yet is not borne out by the modeling results.

In several places the EA states that the pulse releases will only be done after consulting estuarine experts, so that potential high releases will not negatively affect the estuaries. Is this consultation with experts required in any decision-making documentation? It seems that this consultation is not afforded the same level of diligence as the rest of the decision-making process. The decision tree is explicit in its requirements for making releases, with several mathematical and meteorological tests to determine when and how much water may be released. We believe it would be appropriate to add a note in the officially accepted decision tree regarding the requirement to consult with estuarine experts.

We recommend that once the CLA is put in effect, the Corps and the SFWMD should keep an account of the times when discharges to the estuaries were reduced below the maximum amount allowable in the schedule, due to consultation with experts on estuarine ecology. The reasons for the reduction (for example, concern about protecting oyster spawning) should be documented.

General Comments on Effects to Lake Okeechobee

The South Florida Water Management District has ongoing monitoring programs in the lake's littoral zone. We inquire if modifications or additions are needed to these monitoring efforts to assess the effects of the class limit adjustments on lake ecology. Improved performance assessment methods will be necessary to gauge the effects of the class limits adjustments and to continue through the next phase of regulation schedule modification.

Summary

We believe the EA would be much more effective if it more clearly explained how the predicted increased high flows to the estuaries will not significantly worsen adverse effects. Because the Service has participated in several meetings explaining the intent of this modification and the interpretation of its consequences, we are in a better position to understand than a person just reading the document. We believe the public would benefit from a better explanation in the EA of how the analysis led to your conclusion.

Considering the potential benefits that the CLA will likely have on the lake's littoral zone, and the possibly minor high-flow effects on the estuaries, it appears that the trade-off between the two will be beneficial to the overall system. Given this, the Service can support the decision to modify the regulation schedule with the CLA alternative.

LANDERS & PARSONS, P.A.

ATTORNEYS AT LAW

DAVID S. DEE
RONALD A. LABASKY
JOSEPH W. LANDERS, JR.
JOHN T. LAVIA, III
FRED A. McCORMACK
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ROBERT SCHEFFEL WRIGHT

310 WEST COLLEGE AVENUE
TALLAHASSEE, FL 32301

MAILING ADDRESS:
POST OFFICE BOX 271
TALLAHASSEE, FL 32302-0271

TELEPHONE (850) 681-0311
TELECOPY (850) 224-5595
www.landersonparsons.com

October 15, 2004

James C. Duck
Chief of Planning Section
Jacksonville District
U.S. Corps of Engineers
P. O. Box 4970
Jacksonville, FL 32232-0019

Re: Lake Okeechobee Regulation Schedule
FONSI – Temporary Deviation

Dear Mr. Duck:

I am writing on behalf of the Florida Sugar Cane League, Inc. and its grower and processor members to comment on the proposed Finding of No Significant Impact based on your review of a temporary deviation from the approved Lake Okeechobee Regulation Schedule. To summarize our position, we believe that significant impacts have been revealed regarding the “temporary deviation” and that further review beyond the Environmental Assessment is required.

The “temporary planned deviation” which is proposed has not been limited in time so that the deviation from the existing “WSE” regulation schedule may well remain in place indefinitely. If this is the case, your analysis shows that water supply needs in the Lake Okeechobee Service Area will not be met and significant adverse water supply shortages will occur.

Your analysis shows specifically that the proposed deviation will result in an increase in water shortages affecting agricultural irrigation and that almost 200,000 acre-feet of irrigation supply will not be available in years during which water shortage cutbacks are already in place. Modeling shows that in the severe water shortage of 2001, Lake Okeechobee would have been several tenths of a foot lower than the extreme levels encountered had this deviation been in place.

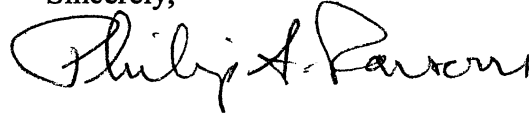
LANDERS & PARSONS

Serious economic impacts to agriculture will result under these and even less severe conditions. Agricultural losses during the 2001 drought have been estimated to be \$100 million but would have been greater had the deviation taken effect then. These losses occurred even though "forward pumps" were in place to increase irrigation supply for the Everglades Agricultural Area.

To avoid the addition adverse impacts to agriculture in the Lake Okeechobee Service Area, permanent forward pumps should be included in your proposal to mitigate the harm that will be experienced as it was in 2001. In addition, revisions to the existing water shortage plan of the SFWMD will be necessary.

We are grateful for this opportunity to comment on the proposed deviation and will be pleased to meet with you to discuss this and respond to your questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Philip S. Parsons". The signature is fluid and cursive, with the first name "Philip" being the most prominent.

Philip S. Parsons,
For the Florida Sugar Cane League, Inc.

Robert M. Norton
4201 Hwy 44 SE
Okeechobee, FL 34977



7

19 OCT 2004

DEAR MR BARRY VORSE

PLEASE SEND ME INFORMATION
ON WORKSHOP HELD OCT 18 2004
AT THE FRESHMAN CAMPUS AUDITORIUM
OKEECHOBEE, FLORIDA. I COULD NOT
ATTEND WAS OUT OF TOWN AT THIS
TIME. WSE REGULATION SCHEDULE IS
GOOD FOR LAKE OKEECHOBEE, AS I SEE IT.

I STILL, AT THIS TIME AND DATE
FEEL, THAT THE STATE PEOPLE WOULD NEVER
MEET THINL 2015 FOR LAKE OKEECHOBEE.
THEY ARE TOO SLOW TO REACT TO PROBLEM
AREAS, AND DO NOT ENFORCE THINGS AS
OF NOW 2004 YEAR.

Robert M Norton
ECOSYSTEM WATCH
LAKE OKEECHOBEE.

21 Oct 04

John

Barry handed this to
me - I am putting it
in Andrew's check book and
giving Yvonne a copy. Susan.

EU2004.NL

EU2004.NL

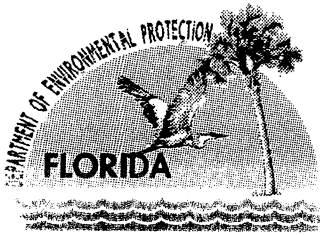
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SAI# FL200409149880C

USACE - Draft Environmental Assessment - Lake Okeechobee
Regulation Schedule, Water Supply and Environment (WSE) -
Temporary Planned Deviation to Adjust Classifications of
Hydrologic Indicators and Forecasts - Central and Southern Florida
Flood Control Project Area, Florida.

The above-referenced project was received by the Florida State Clearinghouse on 9/14/04, and has been forwarded to the appropriate reviewing agencies. The clearance letter and agency comments will be forwarded to you no later than 11/13/04, unless you are otherwise notified. Please refer to the State Application Identifier (SAI) number in all written correspondence with the Florida State Clearinghouse regarding this project. If you have any questions, please contact the Clearinghouse staff at (850) 245-2161.



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

November 12, 2004

Mr. James C. Duck, Chief
Planning Division, Jacksonville District
U. S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

RE: Department of the Army, Jacksonville District Corps of Engineers – Draft
Environmental Assessment – Lake Okeechobee Regulation Schedule, Water
Supply and Environment (WSE) – Temporary Planned Deviation to Adjust
Classifications of Hydrologic Indicators and Forecasts – Central and Southern
Florida Flood Control Project Area, Florida.

SAI # FL200409149880C

Dear Mr. Duck:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the above-referenced project.

The Florida Department of Environmental Protection (DEP) remains supportive of the proposed Class Limit Adjustment to the Lake Okeechobee Regulation Schedule, Water Supply and Environment to provide environmental benefits to Lake Okeechobee without causing significant harm to downstream estuaries or the water conservation areas. The scoping comments provided by the DEP on May 27, 2004, remain valid. One significant DEP comment that was not addressed in the draft environmental assessment was the suggestion that estuarine salinity monitoring be implemented so that real-time water-release adjustments can be made. The DEP therefore reiterates its recommendation that the model be supplemented with estuarine salinity monitoring to ensure that water releases do not cause harm to biological resources of the estuaries. The DEP also recommends that future project modifications consider its previous comments regarding flexibility for water managers' real-time decisions on the release of water from Lake Okeechobee. Please refer to the enclosed comments from DEP for additional details.

The Florida Department of Agriculture & Consumer Services (FDACS) notes that the draft document lacks sufficient information to make a determination that there will be no significant impacts to either the agricultural water supply or the ability of the stormwater treatment areas to meet the requirements of the Settlement Agreement. The FDACS staff notes that further study and analyses are required to ensure that the requirements of the Settlement Agreement are satisfied. Please refer to the enclosed FDACS comments for specific issues that need to be addressed.

The Florida Fish and Wildlife Conservation Commission (FWC) staff notes that further study is needed to assess the impacts to fish, wildlife and aquatic habitats in Lake Okeechobee, the Everglades Wildlife Management Areas and the St. Lucie and Caloosahatchee Estuaries. The FWC has provided

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Printed on recycled paper.

Mr. James C. Duck
November 12, 2004
Page 2 of 3

specific recommendations for minimum flows and modifications to the regulation schedules and general comments on the hydrologic management of Lake Okeechobee. Please refer to the enclosed FWC comments for additional information.

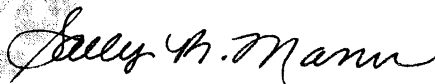
The South Florida Regional Planning Council (SFRPC) notes that the proposed activities may result in adverse impacts to water quality, wildlife habitat and the overall ecological integrity of the region. SFRPC Staff recommends that impacts to natural systems be minimized; the extent of sensitive wildlife and vegetative communities be determined; and protection and/or mitigation of disturbed habitat be required. The goals and policies of the Strategic Regional Policy Plan (regarding Water Conservation Areas, Everglades National Park, and natural resources of regional significance) should be observed when making decisions regarding this proposal. Please refer to the enclosed SFRPC comments.

The Treasure Coast Regional Planning Council (TCRPC) notes that the proposed temporary deviation from the Lake Okeechobee regulation schedule is not in conflict or inconsistent with the Strategic Regional Policy Plan. TCRPC staff note that water quality and volumes should be closely monitored during implementation to ensure that the water releases do not negatively impact the estuaries and other areas downstream.

Based on the information contained in the above-referenced draft EA and the comments provided by our reviewing agencies, as summarized above and enclosed, the state has determined that, at this stage, the proposed project is consistent with the Florida Coastal Management Program (FCMP). All subsequent environmental documents prepared for the project must be reviewed to determine the project's continued consistency with the FCMP. The state's consistency concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews.

Thank you for the opportunity to review this proposal. If you have any questions regarding this letter, please contact Mr. Daniel Lawson at (850) 245-2174.

Sincerely yours,



Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/dtl

Enclosures

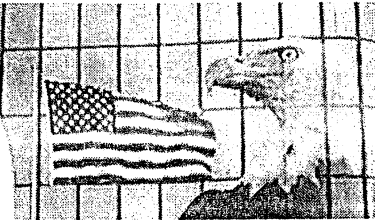
cc: John Outland, DEP, MS 45
Tim Gray, DEP, Southeast District
Greg Knecht, DEP, MS 3560
Gordon Romeis, DEP, South District
Brian Barnett, FWC
Charlotte Hand, FDOT
Forrest Watson, DACS
Wynsum Hatton, TCRPC



Florida

Department of Environmental Protection

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Project Information	
Project:	FL200409149880C
Comments Due:	October 14, 2004
Letter Due:	November 13, 2004
Description:	DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT ENVIRONMENTAL ASSESSMENT - LAKE OKEECHOBEE REGULATION SCHEDULE, WATER SUPPLY AND ENVIRONMENT (WSE) - TEMPORARY PLANNED DEVIATION TO ADJUST CLASSIFICATIONS OF HYDROLOGIC INDICATORS AND FORECASTS - CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL PROJECT AREA, FLORIDA.
Keywords:	ACOE - DEA, LAKE OKEECHOBEE REGULATION SCHEDULE WSE TEMPORARY PLANNED DEVIATION
CFDA #:	12.106
Agency Comments:	
COMMUNITY AFFAIRS - FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS	
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION	
<p>The DEP remains supportive of the proposed Class Limit Adjustment to the Lake Okeechobee Regulation Schedule, Water Supply and Environment to provide environmental benefits to Lake Okeechobee without causing significant harm to downstream estuaries or the water conservation areas. The comments provided by the DEP for the Scoping Notice on May 27, 2004 remain valid. One significant DEP comment that was not addressed in the draft environmental assessment was the suggestion that estuarine salinity monitoring be implemented to allow for real time adjustments to be made. The DEP recommends, again, that the model be supplemented with estuarine salinity monitoring to ensure that water releases are not causing harm to biological resources of the estuaries. The DEP also recommends that future modifications consider previous comments regarding flexibility to allow water managers real time decisions to release water from Lake Okeechobee. Detailed comments were sent out with the State Clearinghouse letter.</p>	
FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION	
1-PAGE LETTER PLUS 4-PAGE ENCLOSURE BY BRIAN BARNETT DATED 10/14/04.	
STATE - FLORIDA DEPARTMENT OF STATE	
TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION	
Consistent; neither District One nor District Four offer any comments. Larry Slayback, District One ICAR Coordinator (239) 461-4300	
SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT	
The SFWMD is a partner with the USACOE on this project. Consequently, a consistency determination is not necessary.	
ENVIRONMENTAL POLICY UNIT - OFFICE OF POLICY AND BUDGET, ENVIRONMENTAL POLICY UNIT	
No Comment	
SOUTH FL RPC - SOUTH FLORIDA REGIONAL PLANNING COUNCIL	
Council staff is concerned about the impacts this proposal could have on the water quality, wildlife habitat and the overall ecological integrity of the region. Staff recommends that impacts to natural systems be minimized; the extent of sensitive wildlife and vegetative communities be determined; and protection and/or mitigation of disturbed habitat be required. The goals and policies of the Strategic Regional Policy Plan (re: Water Conservation Areas, Everglades National Park, and natural resources of regional significance) should be observed when making decisions regarding this proposal.	
SW FLORIDA RPC - SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL	

TREASURE COAST RPC - TREASURE COAST REGIONAL PLANNING COUNCIL

The proposed temporary deviation from the Lake Okeechobee regulation schedule is not in conflict or inconsistent with the Strategic Regional Policy Plan. Water quality and volumes should be closely monitored during implementation to ensure that the water releases do not negatively impact the estuaries and other areas downstream.

CENTRAL FL RPC - CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
AGRICULTURE - FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FDACS staff notes that the draft document does not contain sufficient information to make the determination that there will be "no significant impact" to either agricultural water supply or the ability of the stormwater treatment areas (STA's) to meet the requirements of the Settlement Agreement. The Lake Okeechobee simulated stage shows that the Class Limited Adjustment (CLA) recommended alternative will likely result in lower lake stages during droughts. Until there is an assessment of the economic impacts on growers in the Lake Okeechobee Service Area during the more severe droughts, a determination can't be made of the significance of the impacts predicted by the modeling. FDACS would like to review an assessment on the impact of more severe droughts before committing to support the CLA. The water quality section of the analysis addresses potential benefits to Lake Okeechobee and estuarine water quality, but does not consider the effects of increased (10-15%) releases to the south on the performance of the stormwater treatment areas (STAs) or phosphorus loading to the Everglades Protection Area. STA performance has been impacted in the past by Lake Okeechobee regulatory releases and has resulted in problems with meeting the requirements of the Settlement Agreement. The Corps should look at the effects of the southern diversions on STA performance and other potential water quality impacts. It is unclear how long the "temporary planned deviation" will be in effect since there is no time period recommended in the draft document. A drought is likely to occur while this proposed operational modification is in effect and before a more detailed study with a full EIS could be completed. Revisions to the SFWMD's Water Shortage Plan, Supply-Side Management and implementation of forward pumping would have to be considered and evaluated as part of this planned action in order for impacts to agriculture to be minimized during lower lake stages.

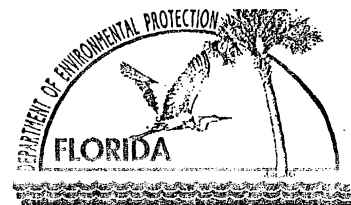
For more information please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

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TO: Florida State Clearinghouse

THROUGH: *JK*
Greg Knecht, Administrator
Water Quality Standards & Special Projects Program

FROM: John Outland & Kim Shugar

DATE: October 22, 2004

SUBJECT: Department of the Army, Jacksonville District Corps of Engineers—Draft Environmental Assessment, Lake Okeechobee Regulation Schedule, Water Supply and Environment (WSE)—Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts—Central and South Florida Flood Control Project Area

SAI#: FL04-980C

The Department has reviewed the Draft Environmental Assessment, Lake Okeechobee Regulation Schedule, Water Supply and Environment (WSE)—Temporary Planned Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts, Central and South Florida Flood Control Project Area, and offers the following comments:

The Department remains supportive of the proposed Class Limit Adjustment (CLA) to WSE to provide environmental benefits to Lake Okeechobee without causing significant harm to downstream estuaries or the water conservation areas. The Department provided comments on the Scoping Notice on May 27, 2004. These comments remain valid.

The need for the proposed action is defined by limitations on releases from Lake Okeechobee during periods when water levels are high and the lake's littoral zone would benefit from a reduction in water levels. The action is expected to have minimal or no adverse effects on water supply and flood management objectives. The proposed action will improve the performance of the WSE regulation schedule as lower level pulse releases, which occur more often while in Zone D, can reduce the likelihood that the lake will go into a zone, which may require higher discharges to the estuaries.

One significant Department comment that was not addressed in the environmental assessment was our suggestion that estuarine salinity monitoring be implemented to allow for real time adjustments to be made. It seems that the CLA implementation is primarily based on flows that are expected to correspond to key estuarine salinity ranges. We suggest that the model be supplemented with estuarine salinity monitoring to ensure that the water releases are not causing harm to the biological resources of the estuaries.

It is also noteworthy that the Engineering Report (Appendix B) states that the CLA was designed to be a small, easily implemented change to improve the WSE regulation schedule and

considered as a starting point for further, more significant modifications to the schedule. Future modifications should consider our previous comments regarding flexibility to allow water managers to make real time decisions to release water from Lake Okeechobee to provide lake and estuary benefits and to incorporate improved long range weather forecasting.

If you have any questions regarding these comments, please feel free to contact Kim Shugar at (561) 681-6706.

cc: Kim Shugar (email)
John Outland (email)
Tim Gray (email)
Stacey Feken (email)



Florida Department of Agriculture & Consumer Services
CHARLES H. BRONSON, Commissioner

RECEIVED

NOV 04 2004

OIP/OLGA

Please Respond to:
Office of Agricultural Water Policy
P.O. 24680
3301 Gun Club Road
West Palm Beach, FL 33416

October 28, 2004

Ms. Yvonne Haberer
Planning Division, Environmental Branch
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Ms. Haberer:

The Florida Department of Agriculture and Consumer Services (FDACS) appreciates the opportunity to provide comments to the Corps on the September Draft EA for the Temporary Planned Deviation to the Lake Okeechobee Regulation Schedule Water Supply and Environment (WSE). The Department is interested in supporting modifications to the operating rules for Lake Okeechobee allowing more flexibility as long as the effect on water supply to agriculture is not impaired.

The draft document does not contain sufficient information to make the determination that there will be "no significant impact" to either agricultural water supply or the ability of the stormwater treatment areas (STA's) to meet the requirements of the Settlement Agreement. The Lake Okeechobee simulated stage (figures 4, 5 and 6) show that the Class Limited Adjustment (CLA) recommended alternative will likely result in lower lake stages during droughts. When lake stages are lower, less water is delivered to the growers under the supply-side management program. The impact of more severe droughts, less water delivered, on the growers in the Lake Okeechobee Service Area has not been evaluated. Until there is an assessment of the economic impacts during the more severe droughts, a determination can't be made of the significance of the impacts predicted by the modeling. The Department would like to review an assessment on the impact of more severe droughts before committing to support the CLA.

The water quality section of the analysis addresses potential benefits to Lake Okeechobee and estuarine water quality, but does not consider the effects of increased (10-15%) releases to the south on the performance of the stormwater treatment areas (STAs) or phosphorus loading to the Everglades Protection Area. STA performance has been impacted in the past by Lake Okeechobee regulatory releases and has resulted in problems with meeting the requirements of the Settlement Agreement. The Corps should look at the effects of the southern diversions on STA performance and other potential water quality impacts.

IDA FISH AND WILDLIFE CONSERVATION COMMISSION

RODNEY BARRETO
Miami

SANDRA T. KAUPÉ
Palm Beach

H.A. "HERKY" HUFFMAN
Enterprise

DAVID K. MEEHAN
St. Petersburg

KATHY BARCO
Jacksonville

RICHARD A. CORBETT
Tampa

BRIAN S. YABLONSKI
Tallahassee

LADDAD, Executive Director
LER, Assistant Executive Director

BRIAN S. BARNETT, DIRECTOR
OFFICE OF POLICY AND STAKEHOLDER COORDINATION
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

October 14, 2004

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OCT 18 2004

OIP/OLGA


Ms. Lauren Milligan, Environmental Consultant
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, FL 32399-3000

Re: SAI #FL200409149880C, Draft
Environmental Assessment, Lake
Okeechobee Regulation Schedule, Water
Supply and Environmental for Lake
Okeechobee, Florida

Dear Ms. Milligan:

The Habitat Conservation Scientific Services Office of the Florida Fish and Wildlife
Conservation Commission has responded directly to the U.S. Army Corps of Engineers
regarding the referenced project. A copy of our October 14, 2004 correspondence is enclosed.

Sincerely,


for Brian S. Barnett, Director
Office of Policy and Stakeholder Coord.

sb/ch
NV 1-3-2
bsai 9880c.doc
nclosure

FISH AND WILDLIFE CONSERVATION COMMISSION

RODNEY BARRETO
Miami

SANDRA T. KAUPÉ
Palm Beach

H.A. "HERKY" HUFFMAN
Enterprise

DAVID K. MEEHAN
St. Petersburg

KATHY BARCO
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RICHARD A. CORBETT
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BRIAN S. YABLONSKI
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Executive Director
Assistant Executive Director

BRIAN S. BARNETT, DIRECTOR
OFFICE OF POLICY AND STAKEHOLDER COORDINATION
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

October 14, 2004

Donna Haberger
Engineering Division
Environmental Branch
Army Corps of Engineers
Box 4970
Tallahassee, Florida 32322-0019

Re: Draft Environmental Assessment, Lake
Okeechobee Regulation Schedule, Water
Supply and Environmental for Lake
Okeechobee, Florida.

Haberger:

The Conservation Scientific Services Office of the Florida Fish and Wildlife
Conservation Commission (FWC), has prepared this letter regarding the Draft Environmental
Assessment, Lake Okeechobee Regulation Schedule, Water Supply and Environmental (WSE)
Assessment, Lake Okeechobee, Florida under the authority of the Fish and Wildlife Coordination Act of
1973. We have conferred with FWC's Division of Freshwater Fisheries and Fish and Wildlife
Science Institute in outlining our concerns.

The primary planned deviation is described to adjust classifications of hydrologic indicators
and limits. The Class Limit Adjustments (CLA) would give water managers greater
flexibility to make releases of water from the lake when the WSE does not presently call for
releases to downstream estuarine environments. Presently, the WSE decision tree does not
call for releases at times when Lake Okeechobee stages are high and the conditions in the
lake are described as normal or dry. This has resulted in high water levels in Lake
Okeechobee even when conditions have been optimal to release excess water from the lake. The
regulation results indicate that these minor adjustments to class definitions could result in
increasing the percentage of time that releases are made to estuarine ecosystems, while in
the regulation schedule, to estuarine ecosystems with a slight increase in discharges to
designated Wildlife Management Areas (WMAs). Our comments will address the Draft
Environmental Assessment (EA) and then the hydrologic management of Lake Okeechobee in

Concerns and Recommendations

Draft Environmental Assessment

The proposed action is called a "temporary planned deviation".

Is there a time limit involved when the proposed changes would end and the WSE would revert back to previous classification limits? The EA should clarify the time interval or conditions after which this action would not be implemented.

The Draft EA does not describe the Everglades WMAs nor does it consider the impacts of the proposed action on the Everglades WMAs.

Since the Everglades WMAs and areas downstream of the lake receive discharges from Lake Okeechobee, they must be described and considered in the evaluation of environmental impacts. These data have been evaluated by the South Florida Water Management District and are located in Appendix B of the draft EA. The likelihood or level of certainty that downstream areas would be subject to 'harm' or 'serious harm' needs to be considered in the draft EA. Appendix B indicates that there will be a slight increase in the discharges to the WMAs yet there is no discussion about the impacts to these areas within the draft EA. The FWC is concerned about impacts to fish and wildlife and their habitat within the WMAs. These impacts should be assessed before actual additional discharges are delivered to the WMAs. For example, releases should be restricted during the dry season when wading birds need consistent water flows in order to have a successful nesting season.

Low volume releases may help avoid emergency releases to the estuaries.

The EA indicates that additional Zone D releases to the St. Lucie Estuary may help avoid the large-scale "emergency" releases during the wet season that have occurred in the past. Conversely, the EA also indicates that there could be an increase in the large-scale releases to the Caloosahatchee Estuary. These large-scale water releases cause substantial damage to the ecology of the lower estuary areas. A decrease in the number of low flow months would benefit upper estuary emergent aquatic vegetation. We note, however, that these different habitats cannot be equally affected as they are vastly different habitats with different flora and fauna and ecosystem functions. Appendix B indicates that the level of the modeled pulse releases was dependent on lake elevation and not based on conditions in the estuary as the releases are actually regulated. These changes may affect the results of this evaluation. Additionally, the FWC requires flows of no lower than 800 cfs in the spring and 1,200 cfs in the fall for the ecological health of the estuary. These changes also may have affected the results of the evaluation.

Flexibility or modifications of regulation schedules is good adaptive management.

Modifications to the schedule, to take advantage of even small changes, are a good way to gain environmental benefits until a new regulation schedule can be developed. Greater flexibility allows water managers to keep the stages of Lake Okeechobee closer to the bottom of Zone

D of the WSE regulation schedule. The lake being operated at the bottom of Zone D would be closer to the lake levels that FWC has previously recommended for the benefit of fish, wildlife, and aquatic habitats in Lake Okeechobee. Additionally, this greater flexibility may result in less frequent extreme high lake levels similar to those that Lake Okeechobee has experienced in recent years.

Lake Okeechobee hydrologic management

FWC previously issued recommendations for Lake Okeechobee operations.

The FWC recommended that lake levels be managed between 12.0 ft and 15.5 ft National Geodetic Vertical Datum. The lake should experience both the minimum and maximum stage within the specified range every three years. Discharge events greater than 2,000 cubic feet per second (cfs) to the St. Lucie Estuary and 4,500 cfs to the Caloosahatchee Estuary should be avoided to minimize adverse effects on estuarine ecology. Additionally, the Caloosahatchee Estuary needs minimum flows of 800 cfs during the spring and 1,200 cfs during the fall to maintain the optimum salinity regime for submerged aquatic vegetation.

Releases of water should not negatively impact downstream habitats.

The impacts of water releases to the Everglades WMAs, St. Lucie Estuary, and the Caloosahatchee River will need to be monitored and evaluated to assess the success of the modified regulation schedule.

Long-term impact of low-level dry season releases is hard to predict.

We concur that the impacts of water releases to the St. Lucie Estuary during the dry season are difficult to predict. During the dry season (winter and spring), water releases may negatively impact species that rely on having higher salinities in specific areas of the estuary. Freshwater releases can cause persistent low salinity in the estuary where species such as the oyster (*Crassostrea virginica*) and the spot (*Leostomus xanthurus*) seasonally exist in larval or juvenile stages. Dry season releases need to be monitored in order to assess their impacts to estuarine species and their habitats.

The regulation schedule of the lake will need to be adaptively managed in the future.

The WSE regulation schedule will have to be modified as different ecosystem restoration components are introduced to the system. The addition of storage to the system will allow for greater flexibility in Lake Okeechobee water level management. While small changes to the WSE may be all that is possible now, our long-term targets may need to be addressed by new regulation schedules.

In conclusion we believe that the proposed changes to the WSE Regulation Schedule could result in substantial benefits for the fish, wildlife, and aquatic plants of Lake Okeechobee. As long as the water releases do not cause negative impacts to downstream environments, we believe that

Ms. Yvonne Haberer

Page 4

October 14, 2004

the changes constitute positive adaptive management until the regulation of Lake Okeechobee can be managed from a system-wide perspective. Questions regarding our concerns and recommendations can be directed to Mr. Chris Harnden at the Habitat Conservation Scientific Services Office in Vero Beach at (772) 778-5094.

Sincerely,



for Brian S. Barnett, Director
Office of Policy and Stakeholder Coord.

bsb/ch

a:\WSE_TD_CLA.doc

ENV 2-16/10/2

CC: Mr. Carl Dunn, USACE, Jacksonville
Ms. Susan Gray, SFWMD, West Palm Beach
Mr. Charles E. Collins, Regional Director, FWC, West Palm Beach

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OCT 07 2004

OIP/OLGA

October 30, 2004

John Milligan
State Clearinghouse
Department of Environmental Protection
Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

RPC #04-0952, SAI #FL200409149880C - Review and comments related to a temporary deviation from the Regulation Schedule, Water Supply and Environment (WSE) for Lake Okeechobee, U. S. Army Corps of Engineers, All Counties.

Milligan:

reviewed the proposal referenced above and have the following comments:

Staff is concerned about the impacts this proposal could have on the water quality, wildlife and the overall ecological integrity of the region. Staff recommends that, if this proposal goes forward 1) impacts to the natural systems be minimized to the greatest extent feasible and 2) the protection of sensitive wildlife and vegetative communities in the vicinity of the project is determined and or mitigation of disturbed habitat is required. This will assist in reducing the adverse impacts to native plants and animals, wetlands and deep-water habitat and fisheries that are goals and policies of the *Strategic Regional Policy Plan for South Florida (SRPP)* seek to protect.

The proposal may negatively impact the Water Conservation Areas and Everglades National Park, and resources of regional significance as designated in the *SRPP*. The goals and policies of the plan, in particular those indicated below, should be observed when making decisions regarding this proposal.

Preserve, protect, and restore Natural Resources of Regional Significance.

Restore, preserve, and protect the habitats of rare and state and federally listed species. For those rare and threatened species that have been scientifically demonstrated by past or site specific studies to be relocated successfully, without resulting in harm to the relocated or receiving populations, and where *in-situ* preservation is neither possible nor desirable from an ecological perspective, identify suitable receptor sites, guaranteed to be preserved and managed in perpetuity for the protection of the relocated species that will be utilized for the relocation of such rare or listed plants and animals made necessary by unavoidable project impacts. Consistent use of the site by endangered species, or documented endangered species habitat on-site shall be preserved on-site.

GOAL 15 Restore and protect the ecological values and functions of the Everglades Ecosystem by increasing habitat area, increasing regional water storage, and restoring water quality.

Policy 15.2 Restore natural volume, timing, quality, and distribution of water to the Everglades, Florida Bay, Biscayne Bay, other estuaries, and the Atlantic Ocean by:

- implementing structural and operational modifications to the Central and Southern Florida Project including Modified Water Deliveries to Everglades National Park, the C-111 Project, and the Comprehensive Everglades Restoration Plan;
- implementing the East Coast Buffer/Water Preserve Areas; and
- implementing the Lower East Coast Water Supply Plan so that the needs of the natural system are met consistent with ecosystem restoration.

GOAL 16 Enhance and preserve natural system values of South Florida's shorelines, estuaries, benthic communities, fisheries, and associated habitats, including but not limited to, Florida Bay, Biscayne Bay, tropical hardwood hammocks, and the coral reef tract.

Water Quality

Policy 16.1 Restore and improve marine and estuarine water quality by:

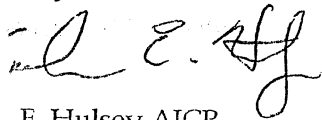
- improving the timing and quality of freshwater inflows;
- reducing turbidity, nutrient loading, and bacterial loading from wastewater facilities, septic systems, and vessels;
- reducing the number of improperly maintained stormwater systems; and
- requiring port facilities and marinas to implement hazardous materials spill plans.

Policy 16.3 Enhance and preserve coastal, estuarine, and marine resources, including but not limited to tropical hardwood hammocks, mangroves, seagrass and shellfish beds, and coral habitats.

Policy 16.4 Enhance and preserve commercial and sports fisheries through monitoring, research, best management practices for fish harvesting, education, and protection of nursery habitat

Thank you for the opportunity to comment. We would appreciate being kept informed on the progress of this project. Please do not hesitate to call if you have any questions or comments.

Sincerely,



E. Hulsey AICP
Resource Planner

Enclosure

Dr. Susan Markley, Miami-Dade County DERM
Elliot Auerhahn, Broward County DPEP
Timothy McGarry, Monroe County Growth Management

COUNTY: ALL

DATE: 9/14/2004

COMMENTS DUE DATE: 10/14/2004

CLEARANCE DUE DATE: 11/13/2004

SAI#: FL200409149880C

MESSAGE:

REFERENCE SAI # FL200404145900C

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNIT	RPCS & LOC GOVS
COMMUNITY AFFAIRS	SOUTH FLORIDA WMD	X ENVIRONMENTAL POLICY UNIT	
ENVIRONMENTAL PROTECTION			
FISH and WILDLIFE COMMISSION			
STATE			
TRANSPORTATION			

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- ☐ Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- ☒ Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- ☐ Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- ☐ Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT ENVIRONMENTAL ASSESSMENT - LAKE OKEECHOBEE REGULATION SCHEDULE, WATER SUPPLY AND ENVIRONMENT (WSE) - TEMPORARY PLANNED DEVIATION TO ADJUST CLASSIFICATIONS OF HYDROLOGIC INDICATORS AND FORECASTS - CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL PROJECT AREA, FLORIDA.

To: Florida State Clearinghouse

AGENCY CONTACT AND COORDINATOR (SCH)
3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

EO. 12372/NEPA Federal Consistency

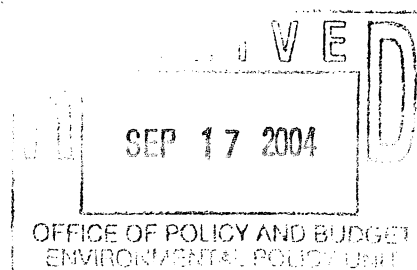
- | | |
|--|---|
| <input checked="" type="checkbox"/> No Comment | <input type="checkbox"/> No Comment/Consistent |
| <input type="checkbox"/> Comment Attached | <input type="checkbox"/> Consistent/Comments Attached |
| <input type="checkbox"/> Not Applicable | <input type="checkbox"/> Inconsistent/Comments Attached |
| | <input type="checkbox"/> Not Applicable |

From:

Division/Bureau: *CPB - Environment*

Reviewer: *Brett Cyphers*

Date: *10/14/04*





RECEIVED

PD-E 27 Dec 04

FLORIDA DEPARTMENT OF STATE

Glenda E. Hood

Secretary of State

DIVISION OF HISTORICAL RESOURCES

Mr. James C. Duck
Jacksonville District Corps of Engineers
Planning Division, Environmental Branch
P.O. Box 4970
Jacksonville, Florida 32232-0019

December 17, 2004

RE: DHR No. 2004-12266 / Date Received by DHR: September 16, 2004
*Draft Environmental Assessment for Lake Okeechobee Regulation Schedule,
Water Supply and Environment, Lake Okeechobee, Florida – Temporary Planned
Deviation to Adjust Classifications of Hydrologic Indicators and Forecasts
Lake Okeechobee, Florida*

Dear Mr. Duck:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, and 36 C.F.R., Part 800: *Protection of Historic Properties*. The State Historic Preservation Officer is to advise and assist federal agencies when identifying historic properties (archaeological, architectural, and historical) listed or eligible for listing, in the *National Register of Historic Places*, assessing the project's effects, and considering alternatives to avoid or minimize adverse effects.

We reviewed the referenced draft environmental assessment at Sections 3.15 and 4.6, Historic Properties. Based on the information provided, it is the opinion of this office that the proposed undertaking will have no effect on historic properties.

If you have any questions concerning our comments, please contact Janice Maddox, Historic Sites Specialist, at jmaddox@dos.state.fl.us or 850/245-6333. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Laura R. Kammerer, Deputy SHPO

for

Frederick Gaske, Director, and
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

☐ Director's Office
(850) 245-6300 • FAX: 245-6436

☐ Archaeological Research
(850) 245-6444 • FAX: 245-6436

☒ Historic Preservation
(850) 245-6333 • FAX: 245-6437

☐ Historical Museums
(850) 245-6400 • FAX: 245-6433

☐ Southeast Regional Office
(954) 467-4990 • FAX: 467-4991

☐ Northeast Regional Office
(904) 825-5045 • FAX: 825-5044

☐ Central Florida Regional Office
(813) 272-3843 • FAX: 272-2340